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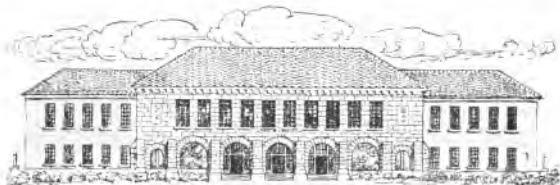
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PROCEEDINGS

OF THE

FIFTEENTH ANNIVERSARY

OF THE

UNIVERSITY CONVOCATION

OF THE

STATE OF NEW YORK,

Held July 9th, 10th and 11th, 1878;

BEING PART IV OF THE NINETY-SECOND ANNUAL REPORT OF THE
REGENTS OF THE UNIVERSITY.

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1879.

CONTENTS.

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	PAGE.
I. Sketch of the Origin, Objects and Plan of the University Convocation. (Reprinted from former years).....	3
II. Minutes of the Fourteenth, Anniversary, July 9th, 10th and 11th, 1877.....	5
Address of Erastus C. Benedict, LL. D., Chancellor of the University, on his first taking the chair of the University Convocation.....	21
Ancient and Modern Estimates of the Physical Sciences. By Wm. D. Wilson, D. D., LL. D., L. H. D., of Cornell University.....	27
General and Special Culture in our Schools and Colleges. By Prof. William D. Wilson, D. D., LL. D., L. H. D., of Cornell University,.....	38
A Few Thoughts upon Horace. By Professor Cornelius M. O'Leary, A. M., M. D., Ph. D., of Manhattan College.....	45
Treatment of College Disorders. By Professor John W. Mears, D. D., of Hamilton College.....	52
Geography Outside the Text-books. By Principal Samuel T. Frost, A. M., of South Berkshire Institute, New Marlboro, Mass., lately of Amenia Seminary.....	57
The Study of English Literature in Secondary Schools. By Principal Albert B. Watkins, Ph. D., of Hungerford Collegiate Institute,.....	61
A Better Organization of Science-Education. By Professor S. Edward Warren, C. E., of Newton, Mass., formerly of the Rensselaer Polytechnic Institute.....	65
The Value of Accent in Greek Verse. By Professor Isaac Flagg, Ph. D., of Cornell University.....	77
Character in the Teacher. By Professor N. L. Andrews, Ph. D., of Madison University.....	83
Collegiate Education of Women. By President L. Clark Seelye, D. D., of Smith College, Northampton, Mass.....	91
The Essential Elements of a Liberal Education. By Professor Joseph R. Buchanan, M. D., of the Eclectic Medical College of New York city.....	98
Regents' Higher Examinations. By Professor Edward North, L. H. D., of Hamilton College.....	105
A Regents' University Catalogue. By Professor Edward North, L. H. D., of Hamilton College	108
University Necrology	110
Chancellor John V. L. Pruyn. By Professor Edward North, L. H. D., Professor Isaac W. Jackson, LL. D. By President Eliphalet Nott Potter, D. D., LL. D., of Union College.....	111
Professor Oran W. Morris, M. D. By Professor Daniel S. Martin, A. M.....	122
Professor Charles Frederick Hartt, A. M By Professor Daniel S. Martin, A. M.....	125
Professor James Orton, Ph. D.	128
Professor William L. Parsons, D. D., of Ingham University. By Mrs. Parsons.....	129
Registered Members of the Convocation.....	131

THE UNIVERSITY CONVOCATION OF THE STATE OF NEW YORK.

I. SKETCH OF ITS ORIGIN, OBJECTS AND PLAN.

[Reprinted from the Proceedings of former years, by direction of the Convocation.]

At a meeting of the Regents of the University, held on the 9th day of January, 1863, the reports of colleges and academies, and their mutual relations, being under consideration, the following resolution was unanimously adopted:

Resolved, That it is expedient to hold annually, under the direction of this board, a meeting of officers of colleges and academies, and that a committee be appointed to draft a programme of business for the proposed meeting, to fix the time and place, and to make such other arrangements as they may deem necessary.

The committee of arrangements on the part of the Regents were Chancellor Pruyn, Governor Seymour, Mr. Benedict, Mr. Hawley, Mr. Clinton, Mr. Perkins and Secretary Woolworth.

The meeting was held according to appointment, on the 4th and 5th days of August, 1863. Chancellor Pruyn briefly stated the objects entertained by the Regents, which were mainly "to consider the mutual relations of colleges and academies, and to promote, as largely as possible, the cause of liberal education in our State. While it is a part of the duty of the Regents of the University to visit the fourteen* literary colleges, and more than 200 academies subject to their supervision, it is obvious that this cannot be done as frequently as desirable, and that some such method as is now proposed, whereby teachers may compare views with each other, and with the Regents, and discuss methods of instruction and general modes of procedure, is alike practicable and necessary.

"A law enacted more than three-fourths of a century ago was cited, by which the University was organized and clothed with power similar to those held by the Universities of Cambridge and Oxford, in England. The University of the State of New York, though generally regarded as a legal fiction, is, in truth, a grand reality. The numerous institu-

* Now twenty-three (1878).

tions of which it is composed, are not, indeed, as in England, crowded into a single city, but are scattered, for popular convenience, over the entire State. It is hoped that the present meeting will more fully develop this fact, in accordance with which the officers of colleges and academies now convened are cordially welcomed as members of a great State University. It is also confidently expected that the deliberations now inaugurated will result in the more intimate alliance and coöperation of the various institutions holding chartered rights under the Regents of the University."

The Chancellor and Secretary of the Regents were, on motion, duly elected presiding and recording officers of the meeting. A committee, subsequently made permanent for the year and designated as the executive committee, was appointed by the Chancellor to prepare an order of proceedings. Among other recommendations of the committee, the following were submitted and unanimously adopted:

The Regents of the University of this State have called the present meeting of the officers of the colleges and academies subject to their visitation, for the purpose of mutual consultation respecting the cause of education, especially in the higher departments. It becomes a question of interest whether this convention shall assume a permanent form and meet at stated intervals, either annually, biennially or triennially. In the opinion of the committee, it seems eminently desirable that the Regents and the instructors in the colleges and academies should thus meet, with reference to the attainment of the following objects:

1st. To secure a better acquaintance among those engaged in these departments of instruction, with each other and with the Regents.

2d. To secure an interchange of opinions on the best methods of instruction in both colleges and academies; and, as a consequence,

3d. To advance the standard of education throughout the State.

4th. To adopt such common rules as may seem best fitted to promote the harmonious workings of the State system of education.

5th. To consult and coöperate with the Regents in devising and executing such plans of education as the advanced state of the population may demand.

6th. To exert a direct influence upon the people and the Legislature of the State, personally and through the press, so as to secure such an appreciation of a thorough system of education, together with such pecuniary aid and legislative enactments, as will place the institutions here represented in a position worthy of the population and resources of the State.

And for the attainment of these objects, the committee recommend the adoption of the following resolutions:

Resolved, That this meeting of officers of colleges and academies be hereafter known and designated as "The University Convocation of the State of New York."

Resolved, That the members of this Convocation shall embrace,

1. The members of the Board of Regents.

2. All instructors in colleges, normal schools, academies and higher departments of public schools that are subject to the visitation of the Regents, and (by amendment of 1868) the trustees of all such institutions.

3. The president, first vice-president, and the recording and corresponding secretaries of the New York State Teachers' Association.

Resolved, That the Chancellor and Secretary of the Board of Regents

shall act severally as the presiding officer and permanent secretary of the Convocation.

Resolved, That the meeting of this Convocation shall be held annually, in the city of Albany, on the first Tuesday in August [see *amendment*], at ten o'clock, A. M., unless otherwise appointed by the Board of Regents. [*Amended*, in 1873, as to the time of meeting, by making it the first Tuesday after the Fourth of July, except when the Fourth occurs on Monday, in which case it shall be the second Tuesday thereafter.]

Resolved, That at each annual Convocation the Chancellor shall announce the appointment, by the Regents, of an executive committee of seven members, who shall meet during the recess of the Convocation, at such time and place as the Regents may direct, with authority to transact business connected with its general object.

At the fourth anniversary, held August 6th, 7th and 8th, 1867, it was

Resolved, That the Regents be requested to invite the attendance of representatives of colleges of other States at future anniversaries of the Convocation.

At the fifth anniversary, held August 4th, 5th and 6th, 1868, the following resolutions were unanimously adopted:

Resolved, That there be appointed by the Chancellor, at each annual meeting, a committee of necrology, to consist of three persons.

Resolved, That it shall be the duty of each member of the Convocation to notify the chairman of the committee of necrology of the decease of members occurring in their immediate neighborhood or circle of acquaintance, as an assistance to the preparation of their report.

Resolved, That the Secretary publish, with the report of each year's proceedings, the original resolutions of 1863, as they are or may be from time to time amended, together with the two foregoing, as a means of better informing the members of the Convocation in regard to its nature and the purposes of its organization.

II. MINUTES OF THE FIFTEENTH ANNIVERSARY, HELD JULY 9TH, 10TH AND 11TH, 1878.

The sessions of the fifteenth anniversary of the University Convocation of the State of New York, were held at the Capitol, in the city of Albany, beginning on Tuesday, the 9th day of July, 1878, at 10:30 A. M.

Chancellor Benedict called the Convocation to order, and prayer was offered by Rev. Dr. Fairbairn, Warden of St. Stephen's College.

The Chancellor then delivered an address, a copy of which is appended to these minutes.

Professor John W. Mears, D. D., of Hamilton College, as chairman of the executive committee, briefly responded to the Chancellor's address, referring to the simultaneous meeting of the Convocation with the New York State Teachers' Association at the High School building in this city, and the American Philological Association, at Saratoga Springs. While this circumstance may tend somewhat to divide the interest which

otherwise centers in the Convocation, he expressed the hope that some advantages may result from the occurrence of these several meetings in proximity to each other.

Professor Edward North, L. H. D., of Hamilton College, read two short papers, one on "A Regents' University Catalogue," and one on "Regents' Higher Examinations."

Dr. J. Dorman Steele offered the following resolution, which was adopted:

Resolved, That the Regents of the University are hereby requested to consider the plan of a general historical catalogue, as suggested in Professor North's paper, and to publish such a catalogue, if it should seem to them both desirable and feasible.

The subject of Professor North's paper on "Higher Examinations" was discussed by Regent Upson, Warden Fairbairn, Vice-President Russel, Professors Lewis and Durstin, Secretary Woolworth, Principals Benedict, Gallup, Clarke, King, Flack, Edwards, and Taylor, and Superintendent Beattie, after which the following resolution, offered by Dr. King, was adopted:

Resolved, That the paper read by Professor North be referred to a committee of five, to be appointed by the Chancellor, to co-operate with the Regents in maturing a plan for higher examinations.

The Chancellor subsequently appointed as such committee Principal J. E. King, Professors E. North, J. J. Lewis and W. D. Wilson, and Warden Fairbairn.

A communication was received from Professor Hall, Director of the State Museum of Natural History, inviting the members of the Convocation to visit the rooms of the Museum at such times as may be convenient to them.

Recess to 3.30 P. M.

AFTERNOON SESSION—3.30 o'clock.

Principal Albert B. Watkins, Ph. D., of Hungerford Collegiate Institute, read a paper on "The Study of English Literature in Secondary Schools."

The paper called attention, first, to the results to be attained by this study; and, second, to the methods of teaching this branch in order to attain these results. Under the first were mentioned the development of the power to express ideas, the formation of mind, the importance of this study in its relation to the study of history, its bearing upon intellectual discipline, and its influence as an effective means of moral and social culture. In regard to the method of teaching this branch, the limited portion of time allotted to its study in different schools, compared to the limitless field to be traversed, was briefly discussed, and the writer gave a brief outline of his own method with his class during the past academic year, including the mastery of Brooke's Primer of English Literature, followed by the careful study of selections from Bryant, Longfellow and Whittier, and from Milton and Shakespeare; and in connection with them the study of metres and rhetorical figures, geographical, historical

and classical allusions, synonyms, and derivation and analysis of words. With some classes the writer had, instead of some of the poets named, read with the class selections from Bacon ; or from Irving and Addison ; or from Burke and Pitt and Webster. The paper emphasized the great importance of better facilities for the pursuit of this branch in college, as well as in secondary schools.

The subject of Principal Watkins' paper was discussed by Professor Wilson, Regent Lewis, and Principals Clarke and King.

Professor S. Edward Warren, C. E., of Newton, Mass. (formerly of Rensselaer Polytechnic Institute), read a paper on "A Better Organization of Science-Education ; or, The Next Step in the New Education."

The object of this paper was to show that what is popularly called "Scientific Education" is not, but should be, as completely organized in successive institutions as the old or classical and literary education is and long has been.

A portion of the paper was devoted to showing that the two lines of education are in fact and should be in actual organization, parallel and co-extensive, grounded on real mental differences, and ministering each in its own way to real wants. The present comparative aimlessness of college "scientific departments" was alluded to, and the remedy for this difficulty was found in the end proposed by the paper, viz., the distinct distribution of the studies in science and modern languages through scientific academies and English high schools ; college scientific departments, parallel with the existing classical ones ; and, finally, technical and polytechnic schools.

In the first of these grades, elements should be taught ; in the second, the general principles of the higher branches ; in the third, the applications to purely professional practice. In this way, point and aim, now lacking, would be given to "college scientific departments;" preparatory English and scientific instruction would be made more serviceable to the many whose school education ends with this stage ; and finally, the existing long and expensive polytechnic school courses, being free from general subjects—which would be provided for in college scientific courses—could be shortened, and yet improved, by being made more strictly professional.

An invitation from the librarian of the Young Men's Association of Albany, to the Regents and other members of the Convocation, to visit the library and reading rooms of the Association, was received and read.

Recess to 8 P. M.

EVENING SESSION—8 o'CLOCK.

Professor Isaac Flagg, Ph. D., of Cornell University, read a paper on "The Value of Accent in Greek Verse," of which the following is a brief abstract :

The essential difference between accent (tone) and quantity (time) in the ancient Greek, is well understood by scholars. In that language, accent, so far from creating rhythm (which was wholly a matter of quantity), was employed as a counteracting musical agent against the monotony of rhythm. The "sing song" delivery, so common in reading ancient verse, results, not from any too exact following of the rhythm

(which is impossible), but from disregarding the proper accentuation of the words—from placing accents uniformly on the syllables which take the stress (*ictus*) of the rhythm. The Greek shows, in the minutest details of its accentual system, the effort to avoid as far as possible this monotonous coincidence of accent and stress. In this regard it approaches nearest of all languages to music pure and simple; and Greek verse read both rhythmically, and with the intonation suggested by the written accents, never appears monotonous. Any person with a correct ear can learn to do this, after close study and practice. Words are to be pronounced in exactly the same way in prose and verse. There is a habit in our best schools and colleges of disregarding accent in reading verse, quantity in reading prose; the latter is the more serious error, but both may be avoided. Without the right observance of both accent and quantity, some of the most admirable properties of Grecian literary art remain unseen.

The subject of the aforesaid paper was discussed by Professor Wilson and Principal Benedict.

Professor N. Lloyd Andrews, A. M., Ph. D., of Madison University, read a paper on "Character in the Teacher" (Regent Warren in the chair). The following is an abstract of this paper:

The possession of personal power was affirmed to be essential for all the higher ends of instruction, more important than were intellectual equipment and educational facilities.

I. The prime requisite is manhood. This involves freedom from all affectation in thought, feeling, or manner. It implies high moral instincts, sound ethical judgments, strict justice, and a delicate sense of honor. No community detects meanness or a low moral tone more quickly than students do. Unselfishness should crown the teacher's manhood. The manhood in him is the source of all true personal authority, and is the guarantee of all genuine and permanent popularity. Without this weight of character, his learning and his capacity suffer disparagement. Arnold at Rugby, and Wayland, Taylor of Andover, and Nott, in this country, were cited as illustrations of manhood in the teacher.

II. High success demands enthusiasm. The elements of this are a genuine thirst for truth, an exalted estimate of the teacher's work, a sense of vocation and a central devotion to his calling. Enthusiasm is to be distinguished from energy, earnestness or ambition, but is confined to imaginative or poetic natures. Though it largely arises from temperament, it is not incapable of increase. No outside reputation can atone for enthusiasm in teaching. Institutions need, not learned book-worms, but enthusiastic teachers.

III. The true teacher has catholicity of feeling. He is not a bundle of prepossessions, and sees that truth is broader than any system. The world's thought has always been largely tentative. Dogmatism fails to accept the lessons of history. Catholicity is entirely compatible with earnest conviction and decided assertion. It mainly concerns the circumference of one's thinking. The belief of certain central truths is essential to power, but even of these one's assertion ought not to be narrowly intensive. The teacher must feel the force of objections, appreciate the position of an opponent, and hail the elements of truth even in systems mainly erroneous. This is (in the end) the only safe way to guide young men.

IV. Another grand requisite is sympathy with the student. The rela-

tion ought never to be merely professional. The teacher ought to take individual and genuine interest in the student, not merely in the gifted, but even in the dull. He must detect the feature of promise in every man, and sympathize with all the various callings to which students aspire. He must enter into the student's feelings, and understand aright the freaks and caprices of student nature, sometimes temporarily tolerating a lower moral standard for the sake of lifting men above it. Like the Roman General Agricola, his motto ought to be "*omnia scire, non omnia executi.*" He must have faith in the student's possibilities. This will beget a sense of responsibility. The maintenance of these vital sympathies is a drain on one's nature, but it finds ample recompense in delightful memories and tender friendships.

V. A crowning qualification is the power of inspiration. This will hold the student to his work, kindle a love of learning, and will stir and quicken thought. The best result of the teacher's work is thinking men of high aims. All other personal elements named above go to make up the power of inspiration. Even a physical element exists—a certain personal magnetism. Without inspiration, there is no high success. It is a power not limited to universities, but found in academies and in common schools. All these need most, not appliances, but men and women teachers having force and insight of character.

The subject of Professor Andrews' paper was discussed by Regent Lewis, Vice-President Russel and Professor Flagg.

On the motion of Professor Mears, an invitation was extended to the members of the New York State Teachers' Association to attend the sessions of the Convocation, as far as practicable.

Recess to 9.30 A. M., to-morrow.

SECOND DAY.

MORNING SESSION—9.30 O'CLOCK.

Professor William D. Wilson, D. D., LL. D., L. H. D., of Cornell University, read a paper on "Ancient and Modern Estimates of the Physical Sciences."

The paper maintained that the Natural Sciences gratify *one* class of human wants as nothing else can—having, in a certain sense, "the promise of the life that now is," but that in their nature they are partial and incomplete, and cannot satisfy all of men's wants or needs. They have a sphere of their own within which they are affirmative and positive; but as soon as they go beyond the proper limits of that sphere, or attempt to do so, they become, from the nature of the case, sceptical, negative—and even possibly contemptuous. They not only can give no promise of "the life that is to come," but rather predispose persons to doubt and deny that there is such a life.

Dr. Wilson said that it was only since the close of the last century and the beginning of this, that the natural sciences had come to be held in their proper estimation. The Greeks really did but little towards their cultivation, and had no idea of their practical value. During the middle ages their pursuit was so connected with astrology, magic and

imposture, that the students of the natural sciences were held in very much the same estimation as the spirit-rappers of modern times. Even Lord Bacon and Sir Isaac Newton had no adequate conception of their true nature and value. It was not until the time of Franklin and Davy, Faraday and Robert Hare, that their true position had come to be appreciated.

He showed further, that on the methods of science we have the same grounds for accepting intelligence, benevolence and purpose in nature as we have for asserting the reality of force. Combine these as attributes rather than regard them as separate entities, and we have one personal Creator, first cause and moral governor of the universe. The reader compared the two to the steam and the machinery of some great manufacturing mill—the machinery can do nothing without steam, the force, and the steam can do nothing without the machinery. But both are necessary to the practical results. The ancient Hebrew prophets saw only the steam, the modern scientist too often sees only the machinery. Let both classes enlarge their views, take in the whole truth, and be no longer content with mere half truths, and we shall see no conflict, and have no thought of any, between religion and science. We shall rather recognize them as the two halves of one harmonious and useful whole.

The subject of Dr. Wilson's paper was discussed by Professors B. N. Martin and Buchanan, and Principal Benedict. (Regent Lewis in the chair.)

Dr. Martin thought it would be difficult to say too much upon the mutual obligations of Religion and Science, and he wished to thank the speaker for his excellent presentation of the subject.

Professor Buchanan gave it as his opinion that physical science is rapidly building up a set of conceptions that will out the divine idea of a first cause. When physiology takes hold of life as well as of chemistry, the harmony of philosophy will not be marred.

President L. Clark Seelye, D. D., of Smith College, Northampton, Mass., read a paper on "College Education for Women."

Dr. Seelye urged, among other things, that men should not enjoy a monopoly in higher education, and strongly opposed co-education. The founder of Smith College was a woman. Following the founder's ideas, attention was given to Greek, Latin and Mathematics, as well as the Sciences; the social and moral aspects of education were all the subjects of careful forethought, and after much earnest consideration, plans were adopted different from those of any similar institution in the land. It was decided that the buildings should be only two stories high, with grounds surrounding them like a private park, about which were to be placed a number of smaller buildings, to preside over which teachers were assigned, so that home-life features might be retained. The founder wished that the institution be Christian and devotional, though not sectarian. The college opened three years ago. There were over a hundred applicants, but only fifteen were found by the faculty to be fitted for admission. This year forty have already been admitted, and as many more are likely to enter in September. The plan is so elastic that the number of the students can be easily increased. Secondary schools have been established to meet the requirements of the college. Female education needs the co-operative system, and colleges should never be

encumbered by preparatory departments within their own walls. The young women at this institution have not only enthusiasm in their studies, but are notably successful even in the acquirement of Greek and the higher mathematics, as well as the ordinary branches. Some of the best scholars have improved in health since their connection with the college. There need be no greater danger to the health of young women than to that of young men in the highest college course. Happily no tendency to imitate some of the masculine traits is or has been manifest. A reception in the art gallery—*e. g.*, takes the place of “hazing.” Womanly graces are stimulated. If women were admitted to the male colleges, we have heard it said the latter institutions would be crowded full. But the women, as is proved by the fact that Vassar, Wellesley and Smith have more pupils than the largest three co-education colleges in the country, prefer their own institutions, as men do theirs.

The subject of President Seelye's paper was discussed by Chancellor Benedict, Vice-Chancellor Pierson, Regent Warren, Vice-President Russel, Professors Wilson, B. N. Martin, Buchanan, Newton, Lamoroux, and Lewis, and Principals Hoose and Flack.

Vice-President Russel, of Cornell University, expressed his thanks for the able paper of President Seelye. He thought, however, that when young men and women were brought together in the recitation room, their minds were turned from flirtation to their studies.

We have never been shocked by any decline of womanhood, where girls are subjected to the influence of co-education. In the lower schools this is the system, why should the dangers be increased in colleges? When women were admitted to Cornell, there seemed hardly any need for “discipline,” and there had not been one case of “discipline” in six months. Since the ladies came, order has been most excellent. Dr. Russel sympathized with the solicitude felt in the welfare of young women, but he must say he believed in their education side by side with men.

Professor R. S. Newton, of the New York Eclectic Medical College, referred to Clark's book on “The Education of Women.” The speaker, however, thought that women never fail to accomplish as much as men; he had never seen women fail in capabilities or in health, when in competition with men—looking at the subject from the stand-point of a professor in a medical college.

Dr. Wilson said he did not regard the question of co-education as settled. He rose to confirm the statements of the vice-president of Cornell. He invited President Seelye to Ithaca, where he thought he could show him without question the good effect of young women on young men, and could prove that the former were not losing the best graces of womanhood. Dr. Seelye had referred to certain newspaper stories about scandals at co-educative colleges. Mr. Wilson thought that these stories should be taken *cum grano salis*.

Dr. B. N. Martin expressed a wish to call up some aspects of the discussion, which he yet felt it embarrassing to present.

It must be remembered that any statistics yet attainable present but an imperfect view of the subject. We educate in our colleges a very large proportion of the young men of the better classes of society, but of the young women only a very small proportion. These form, too, a select portion—the class most highly endowed with intellectual qualities. Now the fact that these select few are able to grapple successfully with the work

of education in college by no means indicates that women, as a class, could maintain a fair standing by the side of the great body of young men. While the choicer and more active minds master their work, and maintain their health in a course of education, it may very well be that the body of young women are yet too frail in organization to admit of the discipline by which we urge forward the male students of our institutions. We are yet, therefore, far from having the data for general conclusions in regard to the ability of women to profit by the ordinary college discipline.

In regard to the moral influence of co-education, it has been said by Dr. Seelye that we have little reason to fear any serious immorality arising from the familiar association of the sexes. This is no doubt true, but we are by no means at liberty to omit all such considerations from our view. If such danger did exist, the facts which would show it would be most sedulously concealed from public notice, and no one would bring them forward for discussion. In regard to the minor aspect of this subject, the case is different and invites discussion.

It has been said in the course of this discussion that children have been educated together in the family, and in the higher schools and academies, and no one has ever complained that female delicacy suffers in the least from this long-continued association.

But had that speaker never seen the remarks recently so widely quoted throughout the country, of Rev. Edward Everett Hale, in regard to the manners and style of our fair countrywomen, as exhibited abroad? He states that in any public dining-room in Europe, one can recognize an American lady as soon as she opens her lips to speak, by the sharp, harsh and unrefined tone of her utterance. Above the murmur of general conversation, the voices of American ladies rise like rockets along a line of fire.

We have in these remarks of a most competent and critical observer, the precise fact which has been denied—the general and painful charge of a want of refinement and delicacy in the manners and sentiments of our American ladies; and the writer goes so far as even to attribute it to the character of our school education, in which girls are urged forward to loud utterance and forward speech.

The same fact may be observed elsewhere. A recent letter from a highly accomplished lady, long a private governess in one of the families of the imperial household of Paris, speaks of the writer's surprise at meeting a party of American ladies in Geneva. She found them vulgar and exceedingly overdressed, loud in voice, and inelegant and unrefined in expression, and she wondered what kind of people they could be. Alas! they were just the *common* kind of those who had, by this very style of education now under discussion, been urged into forwardness of manner and loudness of speech, by competition with boys in this system of co-education, which it is declared has never in any way injured the delicacy or impaired the refinement of our women.

Dr. Martin agreed with the view of President Seelye, that what we need in education is to develop and not to suppress that which is characteristic in each sex; to give to the boy a training which shall develop in him the manliness and energy which are appropriate to him, and in the girl the delicacy and refinement which are the ornament of her sex. Only in this way shall we make the most of each, and this effort will require a system of institutions and of methods wisely planned for the accomplishment of these two different and equally important ends.

Principal Hoose, of the Cortland Normal School, thought the preceding speaker had aptly quoted Rev. Dr. Hale. But he must say, for himself, that he had been ashamed of American men abroad. He failed to see how the best graces of either sex could be advanced, unless the sexes are educated together. He pleaded in the names of hundreds of young women against the statement that it is dangerous for a girl to go to a male college. The statement, he said, is a slander on the sex.

Vice-Chancellor Pierson said he regarded this question as one of the most important that could come before such an organization as this. He had visited Wells College and Cornell, in company with the late Chancellor. At the former the young ladies appeared properly instructed and properly cared for. The impression left upon us was very good. We went to Cornell, inquired of the professors and of the students, and we had no doubt that the influence of the women students was for good. Women to-day must defend certain rights, but are not trained to meet the world. At Vassar, this spring, the Commencement exercises did special credit to that institution and to the lady graduates; but the speaker was not prepared to say that co-education at Cornell or elsewhere is a failure. As for the loud-talking Americans abroad, he thought that an Englishman would be recognized in this country. The races lived under diverse conditions, and were radically and naturally different.

Principal Alonzo Flack said he thought errors had been committed in the statement with regard to the number of students in co-educative and other colleges. He never had heard a man connected with a female college who did not oppose co-education, and *vice versa*.

Chancellor Benedict said the question was not whether women shall have as good education as men; the real question is, shall the two sexes receive higher education together? What will be the effect on the community in the long future should they be thus educated; and is it desirable that young men should be turned into Vassar, Wells and Smith Colleges? I accept the account of the Vice-Chancellor (Mr. Pierson). I would like to hear some one who understands this subject tell us if young men should be sent to Vassar, in order that the young woman should be under better influences. If so, of course co-education is the best plan.

Professor Lamoroux, of Union College, said, that he was happy to agree with the spirit and many of the details of President Seeley's paper, and with most of the remarks of the Chancellor upon it. He agreed with the latter in the statement that the true issue between the co-educationist and the advocate of colleges exclusively for women, is not whether woman should receive an education equivalent (not necessarily like) to man's. Both parties agree on that. The question now regards the best means to the best female education.

Until the establishment of girls' colleges, the mixed college might call the young women to its halls as to their only avenue to a complete culture. But now, the institution exclusively for women arises, offering them the identical or an equivalent course of studies. Thus, at this point, the two parties hold at least equal ground; and this first early issue is eliminated from the controversy. The remaining lines of argument for co-education (which is the aggressive side), are just three, based on the three fundamental elements in human nature—the instincts of emulation, of love of approbation, and of the feeling between the young persons as young ladies and young men. The first of these, it seemed to the speaker, actually worked more strongly against co education than for it.

The motive of emulation, rivalry, was always among the strongest in our nature. It was especially so, in its own ways and aims, in the sensitive, susceptible system of woman. It received already too much stimulus, even in our young men, from the inter-collegiate contests, athletic, oratoric, literary, scientific, and this excitement was reflected on the young women. It was everywhere a doubtful appliance in education. In women particularly, the whole influence on the emotional nature should be calming. Besides, if rivalry was really necessary, surely the young woman would find quite enough of it in a college of her girl companions alone. The institutions known to the speaker present not a few instances in which it is an evident harm to the character, and by that very fact, an ultimate harm to the very powers it seems to improve. The next argument was that the presence of young men increased the diligence and advancement of the young ladies through the latter's love of approbation. This point must fall still more readily at the offer of the same objections. Here is a sentiment, already perhaps the very deepest of the mere sentiments in woman, to which the co-educationist proposes to apply still greater incitements during its most susceptible period. Milton, whose greatest thoughts were often but verified philosophy, has said :

“ He for God only, she for God in him.”

And the principle, in one degree and form or another, underlies all of woman's life. This sentiment, too, receives excessive morbid stimulus in every department of society. It needs no deliberate encouragement anywhere, least of all in plans for sympathetic, wholesome development of character. With regard to both these principles in human nature, the unwritten, spontaneous, universal consent of all the best culture, all the classes and geniuses recognizing the spiritually beautiful in all ages, has demanded in woman's character the feature of calmness. And, above all, with our excitable, irritable American constitutions, our wild rush and sway of commercial, social, political life, let us have one central spot of halcyon repose, to be found only in an element of truest womanhood, not tampered with prenaturally by artificial irritants. The relations between young men and women as such, are also, the speaker thought, unwisely employed by the co-educationist. The frequency, not to say the freedom, of intercourse between the two, as allowed in society in our country, is quite sufficient for all future purposes. It had been urged by some speakers that the girls in mixed colleges learn the earlier the ways of the young men whom they were afterward to meet. But they should be allowed to learn this lesson, and could learn all they ought to know of it and without any of its risks, under the home roof, from the mother's and brother's word and eye. If these points, the speaker said, were as presented (and not only the practical observation of many educators and the artistic sense of all possessing that gift, but the teachings of a true psychology and physiology seemed to him to confirm them), the case must go for Vassar, Smith, Wellesley, Wells, as against the co-educational colleges and academies. If the latter were well enough—which the speaker by no means admitted—the former were vastly better.

Professor Lewis, of Madison University, had little girls to be educated bye-and-bye. He wanted them to go to his own college. They were sent now to a union school; academies and high schools have young men and young women. Why should not this system go on to colleges? Because in the latter supervision is thrown off and irreverence prevails.

The questions of health, ability, etc., might be regarded as settled. He thought there was too little Christian supervision of young men.

Regent Warren said that no mixed college has been abandoned in past years. This is a significant fact. Alleged objections to co-education are not actually realized.

On the motion of Secretary Woolworth (in view of the fact that Dr. Seelye is from another State), seconded by Vice-President Russell, it was unanimously

Resolved, That the special thanks of the Convocation be presented to President L. Clark Seelye, D. D., of Smith College, for his able paper on "College Education for Women," and that a copy of the same be solicited for publication in the Convocation Proceedings.

Professor Wilson moved that a committee of three, of which Warden Fairbairn should be chairman, be appointed to report a suitable memorial minute relative to the late Chancellor Pruyn. This motion was unanimously adopted, and Professors B. N. Martin and Wilson were appointed by the Chancellor as the additional members of the committee.

On the motion of Principal Watkins, the following resolution was, after debate, adopted:

Resolved, That the Regents be requested to take such steps as will entitle pupils of the academies and high schools under their charge, who shall successfully complete the Regents' examination and shall spend three years' in teaching, to a State certificate, entitling the holder thereof to teach in the public schools of the State without further examination.

The Chancellor invited the members of the Convocation to meet him socially in the General Library, this evening, at nine o'clock.

Recess to 3:30 p. m.

AFTERNOON SESSION—3:30 P. M.

A communication was received from the New York State, Teachers' Association, accepting with thanks the invitation last evening presented to that body, and tendering a similar invitation to the members of the Convocation. This invitation was accepted with thanks by the Convocation.

Professor John W. Mears, D. D., of Hamilton College, read a paper on "The Management of College Rowdyism."

Dr. Mears paid a compliment to the colleges of New York State, which had not, in any single instance, attained the bad notoriety of other institutions for disorder during the year. We might gather some lessons from the unfortunate experience of our neighbors. President Porter's book on "The American Colleges" does not treat of this topic. It is desirable that some one should present a diagnosis of the disorders, a history of their origin and a systematic method of treatment. Professor Mears traced them to the exuberance of the animal spirits in youth and did not wish our institutions of learning to be turned into monasteries. Hazing appears to be an American barbarism. This and all other excessive exhibitions of youthful hilariously and disorder, should be suppressed. Strenuous measures on the part of college trustees and faculties are demanded by the public. No policy is worth anything which is not backed by a vigorous enforcement of law. The time may

come when the State itself will interfere to protect those of its citizens who seek opportunities for education, from violent interruptions. Among measures necessary to secure order, Dr. Mears mentions: 1. A full amount of work and holding the students firmly to their regular duties. 2 Opportunities for a reasonable degree of athletic exercises. Excess in these, however, he condemned, quoting a verse from Euripides to the following effect :

Of all the ten thousand evils of Greece,
The w^rst is the pugilistic fraternity.

3. An advance of sentiment in the college community. The sentiment of the college is our great ally. If we cannot create a right feeling among the students, nothing is left but to break down the dormitory system entirely. This might do away with many college evils, but on the whole, the situation would not be improved. How can we advance the sentiment of the college ? The public press was characterized as an efficient ally in this work. It is uniformly and emphatically, as it should be, antagonistic to all college outbreaks. The Y. M. C. A. has a college section and may do some service. The incoming Sophomore classes have the matter in their own hands. If their well-disposed men in all the colleges would join hands in the determined purpose to disconcert all the usual disorders of the first term, and if they were powerfully backed by the faculties and trustees, they would have the glory of creating a new epoch in college life and manners.

The subject of Professor Mears' paper was discussed by Professor D. S. Martin, who moved that a committee of five be appointed to consider the proposal that some unity of effort among college authorities be attempted for the suppression of college rowdyism.

Vice-President Russel seconded the motion, merely for the sake of opposing it as wholly unnecessary in institutions where co-education prevails, and where there is prudent management.

Dr. R. S. Newton spoke earnestly in favor of the motion, in view of existing and most serious evils.

The subject was further discussed by Secretary Woolworth, after which Professor Martin's motion was adopted, the mover asking to be excused from serving as chairman, and nominating Professor Mears. The Chancellor appointed Professors Mears, D. S. Martin, Newton, Benedict and Lewis, as such committee.

Professor Patrick F. Dealy, S. J., of the College of St. Francis Xavier, read a paper on "The True Aim of Education."

Recess to 8 P. M.

EVENING SESSION—8 o'clock.

Professor Daniel S. Martin, A. M., of Rutgers Female College, read a memorial notice of the late Professor Charles Frederick Hartt, of Cornell University.

Warden R. B. Fairbairn, D. D., LL. D., of St. Stephen's College, as chairman of the committee appointed for the purpose, reported the following brief minute in honor of the late Chancellor Pruyn (it being expected that the Committee on Necrology will present a more extended notice to-morrow) :

The committee appointed to prepare a minute expressing the feeling of this Convocation occasioned by the death of the Chancellor, the Hon. J. V. L. Pruyn, LL. D., since their last annual meeting, beg leave to submit the following:

The absence of the Hon. J. V. L. Pruyn from this meeting of the Convocation brings vividly to their minds the kindly relations in which he stood to each one of us. He was endowed by nature with those social qualities which rendered him, apart from his office, a center of attraction. The elegant hospitality, for which he was so justly distinguished, and which will never be forgotten by the members of this Convocation, was more highly appreciated on account of the genial and kind manner in which it was always exercised. His warm and wise zeal in behalf of the educational institutions of this State, for whose interests his time and influence were so freely given, always made us feel that in him we had a true and genuine friend. The dignity and courtesy with which he presided in the meetings of this Convocation, never seeing in any one other than the kindly feelings which animated himself, made it a model of a deliberative assembly. His high character, too, so distinguished for Christian purity, for genuine integrity, and for real truthfulness, was manifest in every office of trust and of dignity in which he was placed. The office of Chancellor of the University of the State of New York was rendered in him more illustrious by these high qualities, which shone so conspicuously in all the duties and relations which it involved. While by his death each member of the Convocation will feel that he has lost a friend, and the Convocation itself a most valuable and earnest supporter, yet as we recall those high qualities which made him one of nature's noblemen, he will feel honored that he has been associated with him in the divine work of education which is to prepare men to fulfill, as he did, the great duties and responsibilities of life.

The foregoing minute was unanimously adopted.

Professor J. R. Buchanan, M. D., of the New York Eclectic Medical College, read a paper on "Essential Elements of a Liberal Education," of which the following is an abstract:

The paper of Dr. Buchanan maintained that the conceptions of education which originated among the Greeks before the development of science, still exert a dominant influence on education.

Education has been considered nothing more than intellectual training or schooling, but it is not effectual intellectual culture, because it does not develop original thought, invention and the power of discovering truth.

Even if the intellectual education were not so contracted in its scope, it would be utterly inadequate as a system, because it is only the fifth part of a true liberal education. The five elements of a liberal education are: 1, physical; 2, industrial; 3, medical; 4, moral; 5, intellectual.

1. The body should be trained in health and vigor, to live in health a hundred years. No school should be tolerated which does not improve the health of its pupils.

2. Industrial education is indispensable for all, for there cannot be an honest and independent life without useful production; such education would speedily quadruple our national wealth and banish poverty.

3. Nine-tenths of all diseases would be prevented, and nine-tenths of the physicians and medical schools abolished by an education in medical

and hygienic knowledge—but a very different education from that of the existing medical schools.

4. Moral or religious education is far more important than intellectual. It has new methods by which the young may be converted into good citizens, and has been fully explained in his article on moral education.

5. Intellectual education, if reformed, would take a higher rank and lead society rapidly in a career of improvement and elevation.

Finally, these five essential elements of a liberal education require no more time than the intellectual education which has been in vogue, and each, by its influence, becomes an aid to the others, especially the moral education, which adds power, zeal and mental fertility to college life to a degree heretofore unknown.

The Convocation then adjourned to ten o'clock to-morrow morning.

THIRD DAY.

FINAL SESSION—10 O'CLOCK A. M.

The Chancellor announced that on the recommendation of the Homœopathic State Medical Society of the State of New York the degree of Doctor of Medicine has been conferred by the Regents of the University on Drs. Harrison V. Miller, of Syracuse; William H. Watson, of Utica; William Gulick, of Watkins, and Egbert Guernsey of New York. Also, that in consideration of eminent benefactions to the cause of education, the Honorary Degree of Doctor of Laws has been conferred on Peter Cooper, of New York city.

Secretary Woolworth, as chairman of the standing committee on University Necrology, made a report, giving the following names of members who have died during the past year, and biographical notices of most of them:

Chancellor John V. L. Pruyn, LL.D.; Professor Isaac W. Jackson, LL.D., Union College; Professor Charles F. Hartt, Cornell University; Professor James Orton, Vassar College; Professor William L. Parsons, D. D., Ingham University, Le Roy; Dr. Oran W. Morris, Cooper Institute; Professor George Hadley, M. D., Buffalo Medical College; Principal William McLaren, Glen's Falls Academy.

A brief notice of Chancellor Pruyn, prepared by Dr. Edward North, of the Committee on Necrology, was read, and the Memorial Minute adopted by the Board of Regents in January last was re-adopted by the Convocation (the Vice-Chancellor in the chair).

Secretary Woolworth announced the receipt of a telegram from President Potter, who had engaged to present a Memorial of the late Professor Jackson, stating that he is unable to be present; and on motion, it was ordered that a copy of said Memorial be requested for the permanent records of the Convocation.

Brief remarks on the character of Professor Jackson were made by Vice-Chancellor Pierson and Dr. B. N. Martin, the latter referring to Professor Jackson's early attention to landscape gardening, so well exhibited in the grounds of Union College.

A notice of Dr. Parsons, communicated by Mrs. Parsons, was read by Secretary Woolworth.

Professor D. S. Martin, of the Necrology Committee, read sketches which he had prepared of Professors Morris and Orton.

Secretary Woolworth added some remarks relative to Professor Hadley and Principal McLaren, characterizing the latter as a remarkable example of enthusiastic devotion to the interests of his school, and of success in enlisting the community generally in its support.

Principal Flack also spoke of Mr. McLaren's early life—the two having been natives of the same township—and of the effective work done by the latter in the Sandy Hill Union School.

Under the head of Miscellaneous Business, the following communication from the State Teachers' Association, being an extract from their minutes, was submitted :

The committee to whom was referred the subject of a Teachers' Home, report : That a committee be appointed, who, with the President, Rev. Dr. Mears, shall prepare articles of incorporation for a home for teachers under the auspices of the New York State Teachers' Association, and shall name a board of corporators for the same, and present the matter to the next Legislature for an act of incorporation.

Resolved, That the University Convocation be requested to unite with the State Association in the matter of an ex-teachers' home.

Dr. Mears, as President of the State Teachers' Association, made a statement relative to the subject, and offered the following resolution, which was adopted :

Resolved, That the Convocation accept the invitation of the State Teachers' Association to unite with them in measures for securing a home for retired and disabled teachers ; and that a committee of five be appointed by the Chancellor to co-operate with a similar committee on the part of the State Teachers' Association.

The Chancellor subsequently appointed as such committee : Principals Clarke, of Canandaigua ; King, of Fort Edward ; Wright, of Elbridge ; Thompson, of Amsterdam ; and Lovell, of Attica.

Dr. Mears, as chairman of the committee to whom was referred the subject of a union of effort to suppress college rowdyism, reported the following statement and resolution :

The University Convocation of the State of New York, having had its attention called to recent disorders in some of the colleges of the country, would express its deep sense of the evils of those disorders, their injury to the colleges and the students, and their grievious damage to the cause of education itself. The Convocation would also express its high gratification at the comparative exemption of the colleges of this State from these evils, and would seriously and kindly counsel the young men generally connected with the under classes in these colleges to unite to mark the present year by a still further advance in the college life ; to avoid entirely all rude and violent demonstrations toward the incoming classes, and to secure for their institutions that high place and reputation as instruments of civilization which every college should attain, and which must be a chief element of permanent popularity and prosperity. Let our students in the colleges of New York State unite to do their part to remove from the institutions of America the bad name

under which they have fallen, even in distant parts of the civilized world. Upon them, quite as much as upon the college authorities themselves, rests the responsibility for the growth of a healthy tone in the college community; to them the Convocation looks for that new modeling of college traditions in the direction of order, good manners, and true manliness which is so loudly demanded by the organs of public opinion in every part of the land.

Resolved, That the Board of Regents be requested to give such publicity to this action as shall seem to them practicable and promotive of the purpose contemplated.

Under the question of adopting the report and resolution, Dr. Wilson discussed the subject in its application to Cornell University.

After further remarks by Principal Flack, and B. W. Downing, Esq., of Flushing, the report and resolution were adopted.

Dr. Mears invited the Convocation, now about to adjourn, to attend as generally as practicable, the remaining sessions of the State Teachers' Association, this afternoon and evening.

As chairman of the executive committee, Dr. Mears reported that there was no further business to come before this session, whereupon Vice-Chancellor Pierson, in the chair, expressed, on behalf of the Chancellor and the Board of Regents, their thanks to the delegates present for their attendance and for the valuable papers that had been submitted to the Convocation. He believed that these meetings are of great service to the State, and to the speaker this had been a session of exceeding interest. It is a pleasure to meet together in this way, to hear thoughts with which, perhaps, one does not agree, but which are at least suggestive; and the great aim of education is to learn how to think. We thank you, gentlemen, and trust that we shall see you all at our next Convocation.

Dr. Martin, of New York, then pronounced the benediction, after which the Convocation was declared adjourned until July, 1879.

[For List of Officers and Registered Members of the Convocation, see end of volume.]

ADDRESS OF ERASTUS C. BENEDICT, LL. D., CHANCELLOR OF THE UNIVERSITY, ON HIS FIRST TAKING THE CHAIR OF THE UNIVERSITY CONVOCATION, AT THE CAPITOL, IN THE CITY OF ALBANY, JULY 9, 1878.

Gentlemen of the Convocation:

I welcome you to this fifteenth session of the Convocation. In assuming the duties of its president, I feel the great responsibility of the position and office of Chancellor of the University. I can promise only to use my best efforts to maintain the interests of education as worthily as did Mr. Pruyn, my distinguished and lamented predecessor, and I ask for myself the same helping hand, the same generous sympathy and cordial coöperation which always cheered him in his labors, and which he, so long and so well, deserved. It is now fifteen years since, in his opening remarks to the Convocation, he said: "The University of the State of New York, though generally regarded as a legal fiction, is in truth a grand reality. The numerous institutions of which it is composed are not indeed, as in England, crowded into a single city, but are scattered, for popular convenience, over the entire State. It is hoped that the present meeting will more fully develop this fact in accordance with which the officers of the colleges and academies are members of a great State University. It is also confidently expected that the deliberations now inaugurated will result in the more intimate alliance and coöperation of the various institutions holding chartered rights under the Regents of the University."

In adopting this passage as the subject of some remarks to which I invite your attention, I shall not attempt to detail the remarkable evidence of the fulfillment of the hopes and expectations of Mr. Pruyn as to the usefulness of the Convocation. I will only say that what has been accomplished should rejoice every friend of sound progress. It is in the advancement of higher education that education will be improved in all its branches, fertilizing the State and blessing mankind. As the fields and the flowers and the harvests, in this great garden of God, derive their nutriment from the showers and the sunshine from above, and as the graces of true religion, which spring in the heart of man, come down from the spiritual influences of the great Father of Light, so the universal education of childhood comes down from the influences of the higher seminaries.

There is no mistake greater than that which considers the proper public provisions for the education of children of the State as common in quality, or low in order, or as a charity for the poor. They are called common, because they are common to all and fitted for all and necessary for all.

Public instruction looks to the good of the State. Its immediate subjects are indeed the individuals who are to be taught, but the good of the State is the ultimate end of the system. As it is the duty of the nation to conduct its military and naval preparations so as to secure in the best manner national security and honor, so, in its educational arrangements, the purpose of the State should be to secure the greatest amount of those advantages which education confers upon the State. We are not, in one case or the other, to be diverted from the best course,

nor to hesitate in pursuing it, because some individuals must inevitably derive greater advantages, or bear greater burthens than others, from the public arrangements. The commerce of the rich and prosperous merchant derives more protection from the navy, than the poor families, in their log-houses beyond the mountains, and these may derive more protection from the army, than the merchant, but those, who see no dangers and feel no need of armed protection, must not complain that the army and the navy are paid from the common and equal taxes of the whole people.

The State has no strength or resources, except in the number, intelligence, virtue, productive power and property of the citizens. The ultimate purpose of the State is to increase all these things. The productive strength of the community is in the direct ratio of its knowledge and intelligence. A British writer says: "The Hindoos are the oldest cotton manufacturers. The cotton grows at their own doors and labor is cheaper there than anywhere else, yet the British manufacturer brings the cotton 13,000 miles, manufactures it at higher wages and carries back the manufactured goods and undersells the Hindoo at his own door, the difference being in the practical producing power which education gives to a people." And the same writer adds, that there is no nation whose competition Great Britain fears so much as that of the United States, because the greater difference of education will bring that intelligence and power which must outstrip other nations in productive skill and labor. The pecuniary value created by educated, mechanical skill and labor, is well illustrated by another writer. "A bar of iron, valued at five dollars, worked into horse shoes is worth ten dollars, into penknife blades \$3,000, into shirt buttons \$20,000, into balance springs for watches \$250,000. All the value, above five dollars, is created by skilled labor." But there lies all around us a not less forcible illustration, on a much larger scale, of which we are ourselves a part. It is almost in the memory of our immediate fathers, that within the limits of this State were numerous and powerful nations of Indians. The Six Nations were strong in intellect, quick in action, of noble bearing and with many beautiful characteristics. They lived under organized governments and formed powerful confederacies, whose influence was courted in the proud old monarchies of Europe. Here had been the long home of their race. The ground was full of their dead generations, yet it was a wilderness still, and all their values were represented by a few belts of wampum. They had none of that productive power which education gives to a community. They are already gone and forgotten, as nations, and their few surviving individuals peddle their baskets and Indian ornaments on the crowded highways of educated travel. And the forest glades, where, at their council fires, the wild eloquence of prophets and orators roused their associate braves, are now covered with the fields, the farms, the factories, the cities, the canals, the railroads, the cultivation, the arts, the schools, and the untold wealth of 5,000,000 of New Yorkers. Education has made the difference. Let us for one moment compare a portion of New York with the little kingdom of Saxony. That kingdom is in area one-third as large as that part of New York lying north of the Mohawk, and is similar to it in physical geography. It is several degrees further north than Quebec, much of it is cold, rude, mountainous and impracticable, yet it has a population three times as large as that of Northern New York, and has one university (Leipsic) with eighty-five professors and 1,000 students, six academies of the arts and medicine,

with forty-three professors and teachers and 1,400 pupils, eleven gymnasia (colleges) with 1,590 pupils, six higher burgher schools, three special institutes for commerce and military affairs, nine teachers' seminaries with 363 pupils, seventeen higher schools of industry or technical schools with 779 pupils, sixty-nine lower technical schools with 1,000 pupils, twenty-four schools for lace-making with 1,928 pupils, 2,155 common schools with 278,000 pupils. Under such a system of education Saxony could not fail to be, as it is, one of the most remarkable countries of civilized Europe. There is no country where more is made of the land, while its granite hills and rocky ravines are pierced with 500 mines. No one can fail to be struck with the wonderful thrift, comfort, intelligence and contentment everywhere apparent, and all arts are carried to the highest perfection. What might not Northern New York be, if such means had been used to develop its resources? We can go nowhere but to cultivated intellect and skill and trained muscular dexterity, to work the metal in its finer forms, to engineer the railroad and canal, to study the soil and the plant and the rock, to invent the tool and the machine and to exercise real creative power, and to find in a little water, converted into steam, the productive toil of more than the thousands that built the pyramids.

These familiar truths inspired the earliest of our American States to incorporate into their first constitutions the duty of providing for higher education—Massachusetts: "It shall be the duty of the Legislature in all future periods of the commonwealth, to cherish the interests of literature and the sciences." Pennsylvania: "The arts and sciences shall be promoted in one or more seminaries of learning." South Carolina: "All useful learning shall be duly encouraged in one or more institutions." Georgia: "The arts and sciences shall be promoted in one or more seminaries of learning;"—and so on in the others, and, in the more recent constitutions, are still more positive and liberal organic enactments as to a higher education, not omitting other stringent provisions as to common schools.

In this State, the war of the Revolution had hardly ceased before the establishment of a great University for the whole State occupied the minds of our greatest men. On the assembling of the first Legislature after the peace, Gov. George Clinton, in emphatic terms, called its attention to the subject of the revival and encouragement of seminaries of learning, and the two houses were hardly more than organized before a bill was introduced and was passed, providing, among other things, for "erecting an University within this State" incorporating it by the name and style of "The Regents of the University of the State of New York," to be composed of all the colleges and academies which should exist in the State.

The idea of having all the institutions which constituted the University, governed and managed by the Regents, seems to have been the original idea of the founders of the University. It was, however, soon found that that centralizing idea was the constitutional vice of the University, as at first incorporated, and in 1787 a committee of the Regents was appointed consisting of Mr. James Duane (the mayor of the city of New York), Mr. John Jay, Rev. Drs. John Rodgers, John Mason, and John H. Livingston, Gen. Matthew Clarkson, Prof. John D. Gros and Gen. Alexander Hamilton, not only the ablest and most distinguished members of the Board of Regents, but men whose superiors could not be found in the nation, to take into consideration the state of the University.

That committee, in their report, recommended two great changes in the University. One that the respective colleges should be entrusted to distinct corporations, independent of each other, with competent powers and privileges for local administration, under such subordination to the Regents as should be thought wise and salutary.

This is, in a very general sense, conformed to the pattern of the English University of Oxford, which is historically stated to have been the purpose of the committee. That University consists of twenty-five colleges situated in different parts of the city of Oxford, each quite independent of the others in its corporate organization and modes of administration. All these colleges are combined into one University, which is also a corporate body, governed by statutes of its own making, its government being in part in a general body, something like our Board of Regents, and in the Convocation whose function is to consider all subjects connected with the credit, interest, and welfare of the University, its quorum consisting of all who are present. At the time and in the House of Convocation is held the Commencement of the University and the degrees are there conferred. The municipal body politic in which those colleges are situated is the city of Oxford. Ours is the State of New York, much larger indeed, but its colleges are also independent of each other and are none the less combined into one great University.

The other great change recommended was that liberal protection and encouragement ought to be given to academies for the instruction of youth in the languages and useful knowledge, by incorporating them and giving to each a local board of trustees, fixing a permanent superintendence which would greatly contribute to the introduction of able teachers and to the preservation of the morals of the students, as well as to their progress in learning with such privileges as would make them more respectable, and would be a strong incitement to emulation and diligence, both to the teachers and scholars. The committee close their report by saying that they feel themselves bound in faithfulness to add, that the erecting public schools for elementary instruction is an object of very great importance, which ought not to be left to the discretion of private men, but should be promoted by public authority. The committee adds "the fact as true as it is painful" that too many of our youth are brought up in utter ignorance. This, says the committee, is a reproach under which we have long labored, shamed by the example of our neighbors who, not leaving the education of their children to chance, have wisely diffused, throughout their States, a public provision for their instruction. Thus, in few words, that distinguished committee suggested our great system of public instruction in the gradation of the common schools, the academies, the colleges, the university.

How they mistake, who suppose that all, which the State ought to promote and pay for, is instruction in reading, writing, and arithmetic! It is not these which the State wants for its protection, preservation, power and progress, but that education and cultivation which gives the world assurance of a man, with his faculties sharpened, his powers strengthened and his resources multiplied and invigorated. Such, according to their several ability, are the want of the State, for these are what make the State. In this presence, I need not exalt that bond of union and strength in a State, which comes from rich and various literature, science and art, useful as well as ornamental and æsthetic. I will, however, refer to the beneficial moral effect which the national character takes in by individual absorption and unconscious education.

From the last report of the Superintendent of Public Instruction we learn that the whole number of pupils in the public schools and seminaries was 1,182,395, and the number of paid teachers is more than 31,000. I here borrow a thought from our most eminent fellow-citizen who, all along through his most distinguished public career, has been a true, earnest, thoughtful, and out-spoken friend of public education—ex-Governor Seymour. I have not his words at hand, or I would quote them. The schools throughout the State are educating, all along through the ages, a vast crowd of teachers—every pupil, out of school, through life, being a radiating center of example and instruction, educating those among whom he has his way of life, and for this neither citizen, nor State pays rate-bill, or tax, or salary. We cannot over-estimate the value of this unconscious, out-of-school instruction and influence, not only of the pupils, but of the appointed teachers in all the departments of instruction.

I have referred to the prophetic expectation of Chancellor Pruyn, in his remarks to the Convocation, fifteen years ago. This day is this great prophecy fulfilled in your ears. We have one great University, consisting of thirty-five colleges, including special and professional colleges, and 234 academies, in prosperous, active instruction, spread out in all parts of the State, all bound together in one great bundle of university life and strength, with that freedom which secures the greatest activity and progress, and with that fellowship and confidence which causes them to act in harmony, to partake of the same spirit and motion and go on in the same great current, and to exert a most powerful influence on the 12,015 common schools, which contain more than a million of pupils, subject to the direct, personal and official supervision of the Superintendent of Public Instruction, himself a member of the Board of Regents. All these, by measures adopted within the last fifteen years —by examinations, certificates and diplomas—are constantly reminded that they have a fixed legal relation to the University, and that the Regents and the colleges and the academies, look upon them as their younger kindred of the same educational stock.

The number of students in the higher seminaries, which more properly constitute the University, is 36,208, and their property amounts to \$22,118,810. The members of the colleges proper, including officers and students, are more than 7,000 in number. What an advance in healthy progress since 1784, when there was but one poverty-stricken college, and not one academy, nor one common school in the State. I shall not occupy your time with the details necessary to show what a vast economy is this system of public instruction when compared with the expense of educating the same number of pupils in private schools and seminaries at their usual prices.

I must, however, accept this occasion as an opportunity to offer to the Convocation and to the Regents and to individual seminaries, some suggestions which, if adopted, would seem to unify our system of University education still more, and to commend it still more to the favor of right-minded men. It seems to me that all the institutions which compose the University, and all the educators who compose its teaching force, should unite in making more conspicuous and impressive, this idea of a great University of active instruction. As all these institutions make this University, so they will all derive strength and honor from making visible, conspicuous, and honorable that common University existence. In that manner will the excellence of each and the combined

greatness of the whole shed a benign and a beneficial light on the whole University. All will be magnified, and each will be honored, and this without labor or expense. The fable of the bundle of rods is a suggestive illustration.

This may be appropriately done:

First. By every institution placing on its catalogues, reports, circul-
lars, programmes and other official publications, in a head line on the
title page, visibly but not ostentatiously, the words: "University of the
State of New York," to be followed more conspicuously by the matter
relating to the particular institution.

It would also be appropriate and free from any objection, to insert,
after the title page, a list of the Regents of the University, and to follow
it with the trustees, etc., of the particular institution, without any
other or further mention of the University. This will be simply an
official statement of a connection with the University. And

Second. Let each institution send to the librarian of the State library,
from time to time, duplicate copies of all their printed catalogues and
other publications, for preservation in the State library, as contributions
to educational statistics.

Third. Why should not the Convocation as a part of the University—a
most useful, honorable and active part, important in securing mutuality
in feeling, in activity and in knowledge and in concert of example and
influence—be permanently established and organized by an ordinance
of the Regents, with a provision for an annual Commencement of the
university in the State capitol at the time of the Convocation, at which
there would be literary exercises by distinguished men, and where should
be conferred such degrees as may be conferred by the Regents?

Fourth. It seems to me, also, that there should be published annually
a catalogue or calendar of the University, embracing such matter as is
usual in such publications, and also that, at fixed intervals of years, there
should be published a general catalogue of instructors, trustees and
graduates.

It can hardly be doubted that bringing the University thus to the light,
would surprise us all with the revelation of libraries, books, apparatus
and scientific collections, and would exhibit favorably our educational
progress, and make it still more honorable to the State.

That progress, through the gristle of early life, well suggests its possi-
ble greatness in the years to come. Oxford is the solid growth of ten
centuries.

I venture to say, gentlemen of the Convocation, that with such col-
leges and such a University, and with such teachers and means of investi-
gation, if any students desire to press their researches further, in any or
all post-graduate studies, it will not be your fault, nor the fault of the
colleges, nor of the University, but their own fault if they fail to accom-
plish their laudable desire.

ANCIENT AND MODERN ESTIMATES OF THE PHYSICAL SCIENCES.

By Professor WILLIAM D. WILSON, D. D., LL. D., L. H. D., of Cornell University.

Nothing is more natural than that men, who are enthusiastically engaged in the pursuit of anything, should have an exaggerated estimate of the importance of the object of that pursuit; and it is well if there be not, together with the exaggerated estimate, something of narrowness and underestimate of other objects of pursuit, if not a contempt for them.

This narrowness of mind does not arise from the nature of the subject, and is not confined to any one class of men. It arises rather from the nature of the mind itself; and is sure to be a result of a too exclusive devotion to any one line of study or department of labor. To appreciate others—whether we refer to the men or their labors—we must know them, know something of their labors and their difficulties, as well as of their results.

With this thought in mind, it is my intention to say something, on this occasion, of the estimation in which the physical sciences, and the men who pursue them, have been held in times past, and are now held, and their probable relation to the future.

One who has not looked somewhat carefully, and thoughtfully into the history of the past, is not likely to appreciate the relation of the physical sciences to the other departments of human knowledge. We know that in many ages the men who were engaged in the pursuit of those sciences were disesteemed and opposed. We have heard much of the "*conflict of science and religion*," but we have not always heard all that is to be said on one side, at least. The men of science of to-day are honored and encouraged; and to many it seems strange and most unaccountable that it should not always have been so. Inferences, most unfavorable to philosophy and religion, have been drawn from this fact. But the men of science have not always been what they now are; they have not always confined themselves to their legitimate sphere; they have too often been animated by a spirit, and had aims with which the men of science of this age, whom we so much admire and appreciate, have no sympathy, and for which we have no respect. The idea of science, its sphere and usefulness which we *now* entertain, is of a very modern origin. It has come into vogue, in fact, since all the "warfare of science" has passed away, and all its "battlefields" have been converted to quite other uses.

We now look upon the knowledge of nature as the most useful knowledge we can have; it enables us not only to understand and enjoy the pleasures that come from knowledge—from understanding the facts and laws of nature—but, more than this, it ministers to our more material wants; it diminishes labor while it increases our resources and immensely improves the quality of the commodities we have to use. We thoroughly appreciate the maxim, "Knowledge is power." We see and admit that these sciences relate to the first and most fundamental wants—to health, to food and raiment—to comfort and protection—to the welfare of the body—the mutual well-being of humanity; they are one of the chief means of the world's progress—one of the most powerful agents in promoting that progress.

But it has not always been so. In the Greek age, what we now call science was held in contempt, not only by the priests and religionists, but by the philosophers and statesmen as well. Even the few who were most thoroughly devoted to it, like Aristotle and Pliny, Archimedes, Theophrastus, Erostosthenes, etc., secured little or no sympathy with their labors in this direction. Aristotle, the greatest of them all, was better remembered and more highly appreciated for some metaphysical and logical speculations than for all he did or cared to do for the promotion of the natural sciences.

We are accustomed to regard Socrates as the wisest and most practical of all the ancient philosophers. But he appears to have had no very high estimate of what we now call science. "He taught his followers," says Xenophon, "how far it is proper that a well-educated man should be versed in any department of knowledge." Geometry, for instance, he said that a man should study until he should be able, if occasion should require, to take or give land correctly by measurement, or to divide it up and portion it out, for cultivation; but of pursuing the study to diagrams, hard to be understood, he disapproved, for he said he could not see what profit they could be to any man. "He thought that men should study astronomy only so far as to know the hour of the night, the month of the year and the seasons, with a view to traveling by land and sea, or distinguishing the watches of the night, the one from the other; but to continue the study so far as to be able to distinguish the bodies that do not move in the same circle with the heavens—the planets and the irregular stars, and to weary oneself by inquiring into their distances, their periods of revolution, and the course of their motions—he greatly discouraged."

Of course, I cannot quote his opinions in regard to most of the modern sciences, for they had no existence. In fact, nobody thought of them then except as idle pursuits which might gratify a somewhat low and vulgar curiosity—which, however, could do nobody any good. They were not supposed to have any relation to the cooking of food or the making of clothes. Perfumes were in demand; the art of coloring was pursued to some extent, but nobody seems to have thought that there could be a science of nature that would render any material help in these matters. Hardly does it appear to have occurred to any one that a knowledge of anatomy and physiology, or an acquaintance with the nature and growth of plants, could be turned to any use in preventing or in curing diseases.

I cannot take time to follow up the historic review. But all through the Middle Ages the men who were devoted to the study of nature, can hardly be said to have had in view anything that we should now call science. Whatever science really gained was an indirect and unanticipated result. The men who were devoted to its pursuit seemed, for the most part, to *conceal* rather than to communicate what they had come to know. Some were in pursuit of an "elixir of life" which would cure all diseases, and prolong life and youthful bloom and vigor indefinitely; others were in hopes of finding some universal solvent, by means of which all the baser metals could be turned into gold. And these efforts were but too often accompanied by pretensions and cheats which were not at all calculated to make any good-will for those who engaged in them. We read, for example, of one Lulli, who claimed to have converted 50,000 pounds of the baser metals into gold. Whether he had actually succeeded or not, contemporary history does not inform

us; but he got his pay for the gold from his sovereign, who, as we may well believe, was not likely to think any the better of "scientific" men, after this experience of their usefulness to the world.

And all through this period the pursuit of science was connected, in the public estimation as well as in practice, with astrology, fortune-telling, necromancy, magic, and all the forms of imposition in the black art to such an extent that it is not surprising that both statesmen and ecclesiastics, with all others who were well-wishers to mankind, failed to discriminate the few who were seriously devoted to the pursuits of science for its own sake and for its legitimate uses. To do them justice, "scientific men," as the term was then understood, were held much in the same estimate as the so-called "spiritualists" and spirit-rappers of our day; there had been so much of absurdity, so much of fraud, and so many exposures of trickery, that scarcely anybody believed that any good could come of it.

Of all the men of these Middle Ages whose names have come down to us there is no one that takes deeper hold of the heart than that of Roger Bacon. In many respects he was the superior of his great modern namesake, the Baron Verulam. Born in 1214, he studied theology and became a monk of the Franciscan order. He devoted himself, however, chiefly to the study of languages and natural philosophy. I do not find that he ever renounced his faith or discontinued his religious culture. He made great progress in science, however. He understood the refraction of light, explained the principles on which microscopes and telescopes are made as well as those that account for the colors of the rainbow. He made an explosive mixture pretty much as we now make gun-powder and of the same materials. He knew of various kinds of gas, though the word was not invented for some two or three hundred years after his time. In his "*Opus Majus*" he assigns four reasons why science had made no better progress, namely:

1. Too much blind confidence in authority.
2. Too much respect for mere customs and usages for which we can assign no better reason than the fact that they are customs.
3. Too much regard for the popular prejudices of mankind.
4. Too much conceit of the attainments already made.

These four reasons remind us very forcibly of the four classes of "idols" of the great Verulam. Had he seen them? Did they "run in the blood" of the family? Or are they so obviously true that it made only impartiality come in sight, and a better patient, therefore, to discover them? It is, indeed, true that the great work of "the admirable doctor," the "*Opus Majus*," attracted but little attention in his day, and was, in fact, scarcely known to European scholars until the edition of Dr. Jebb, in London, 1557, and the great Francis was too much absorbed in other matters to look much into such relicts of the past. I presume, therefore, that the classification of the causes of error in the pursuit of science was alike original in either case.

And as the men of his age—its statesmen as well as the ecclesiastics—failed to discriminate between him and the mere mountebanks, imposters, and charlatans of the age, just, as in the past, the men of Greece did not discriminate between Socrates and the herd of menial sophists, and even Lucian spoke of our Lord as "that crucified sophist."

I do not believe that the men of that time had any conscious intention to oppose *the truth*; the fact was that they had no idea that any "truth," or anything else that was good, could come from the pursuits of

scientific men. Doubtless, statesmen and ecclesiastics alike were jealous of their power and their ascendancy over the minds of men. But even this was not all selfishness and bigotry; these were times of ignorance and barbarism—of superstition and slavish servility. This was the fundamental and stubborn fact which the men of that age could not ignore or neglect without losing all power for good. Liable to abuse, and abused, as doubtless their authority often was, it was, nevertheless, *the one thing* that guided humanity through that dark period, and brought it out, in a condition to be capable of better things when that good "*Ice Age*" of humanity, if I may be allowed so to call it, had passed away. Then as now and ever, order, even at the expense of something of liberty, is better than the licentiousness which knows no law, submits to no restraint, and acknowledges no authority.

Passing further down the current of history, we find that even the great Lord Bacon does not appear to have fully appreciated the natural sciences, to the intents and promotion of which he devoted so much of his best thoughts. He regarded magic as a legitimate department and aim of science; not, indeed the low and vulgar stuff that is sometimes called by that name, but "the ancient and honorable wisdom which the Persians cultivated, and which they thought to be, or to imply a knowledge of the relations of universal nature." And even Sir Isaac Newton, a century later than the time of Bacon, gave up, at one time, the study of natural science and mathematics for the study and practice of law; because, as he said, he found them "dry and barren of any practical results." It was not until the close of the last century and the beginning of this—not until the appearance of such men as Franklin and Davy, Bertholet and Count Rumford, Robert Hare and Faraday, not to mention any that are living, that we find men beginning to entertain practical views of the natural sciences.

Thus we see it is only as it were *to-day*, that we have come to see their true place in culture—their true utility and function in promoting the welfare and civilization of mankind. We now see that it makes us masters of this world; that they have, in a most pre-eminent sense, "the promise of the life that now is;" they teach us to bake and to brew, to spin and to weave, to plow the ground, to sow and reap the crops, and to manufacture whatever labor can produce into the forms most useful for man. They enable us to overcome our enemies, to connect the most powerful as well as the most dangerous of nature's agencies to our use.

But, then, science is not all, nor can it satisfy all of man's wants. It borrows from mathematics many of its most useful and indispensable formulæ. It borrows from metaphysics, too, its first axioms—all the really major premises on which its deductions depend. It does not supply the place of art and of poetry. It does not satisfy the deeper wants of the heart and the flesh, which, after all that science can do, will "cry out for the living God."

These four—art, poetry, religion and science—are necessary for man. They are not antagonistic, they are not contrary the one to the other, they are not incompatible, they are rather parts and complements of one comprehensive whole, which both as a whole and in its parts, in their proper relation and importance, are necessary to human culture and human welfare.

And yet, in a measure, they are exclusive. The man who devotes the most of his time to either of them, and excels in that to which he devotes his time, is likely to underestimate the value of the others. He is

likely not to appreciate its arguments or to understand its methods. Perhaps the day for oppression and persecution has gone by. But the peculiarities of the human heart, out of which they grow, have not passed away, and are not likely to do so in many generations to come.

When religion was in the ascendancy the ecclesiastics appear to have thought that they had a right to preëminence, both for themselves and for their cause. They regarded their temporal authority as the only thing that had provision "for the life that now is," and their teaching as the only thing that could give hope for "that which is to come." But now scientific men have grown more bold; they have assumed a new position; they claim to have a word to say about "the life that now is," at least. And they proceed so far in many cases as to raise doubts with regard "to that which is to come."

Of course, nobody believes that mere, visible, tangible, inert matter is the sum and substance of all that there is in the universe. Nor is it at all strange that scientific men, adhering closely to their methods of observation and inference, should come to the conception of Force as something as real, as substantial, and as indestructible as matter itself. To the eye of observation everything is in a state of change more or less rapid. Every change is seen to be preceded by something which is regarded as a cause. And over and above all the visible objects which are seen to act on each other, the mind is led to something invisible. If the sun acts on the earth, it is by means of light and heat as well as gravity. And it is one of the late discoveries that heat and light, together with the other "imponderable agents," can be changed or converted the one into the other. And these agents are called "forces," and we speak of the force of heat, the force of electricity, etc. Hence nothing more natural than the suggestion that, if these so-called "forces of nature" may be converted into one another, they may all be but different manifestations of one Force. And true for the "*men of science*," in this modern use of the term, the universe consists of Matter and Force. And the doctrine that wherever we see matter in a state of motion or change, there is to be found at work some force, or some form of the One Force, is the natural and the logical result.

Hence the attempts to classify these "forces," or these "*forms of Force*." Herbert Spencer, as is well known, names seven especially: Heat, Light, Electricity, Magnetism, Cohesion, Affinity, and Gravity. Others think that to this list there should be added one other—namely, Life, or Vital Force. Some writers would include Mind, or "*Mentality*," in the list. But however the list may vary, the writers are all agreed in the main point we are considering—the reality, the indestructibility, the coördination, and the conservation of Force.

But thought and intelligence are as real as force—as real as light and heat. I perceive the table before me, and I know that I perceive it; otherwise my perceiving it is no knowledge, or means of knowledge. I know that the stove is warm. In this act the two realities—such as they are—"heat" and "knowledge," are both implied, the one as much and as truly as the other. Nay, the one, knowledge, is more truly and indisputably implied than the other; for if the act of knowledge is not real, I do not know that the stove is hot, and this "form of motion" in this case is *for me* as if it did not exist—is, in fact, non-existent. And so of all the rest; if knowledge is not real, we have no right to believe in or speak of the heat or light as real. If knowledge is not real, nothing is real.

But knowledge, thought, intelligence, are not peculiar to myself. I see evidence of it in others as well; evidence such that I can no more doubt its reality in them than in myself. I can no more doubt the reality of intelligence in them than I can doubt the reality of heat, of light, of electricity, or of any one of the physical forces, in the phenomena of the outward world.

Hence, besides matter and force in the world, we have thought or intelligence also.

But this, further, is specially worthy of note. I see that I am not always intelligent, just as my stove is not always hot. In sleep, in coma, in syncope, I am no more intelligent than any stove, or the bed on which I lie. So, also, when awake and conscious, many small acts occur of which I am not conscious; which I do not think of at the time, and in which I have no purpose or aim. The same is true of my fellow-men, and I soon learn to discriminate *by the outward appearance of the acts*, those that proceed from purpose and are accompanied with intelligence from those that are not. Sometimes I may be mistaken, but for the most part I am not. And, at any rate, I find that there are the two classes of acts; the one that proceeds from purpose, and is accompanied with intelligence or knowledge, and the other, that are without purpose; done, perhaps, spasmodically, and without consciousness or intelligence on the part of the agent. In sleep, for example, I move my hand or my foot, with no object or purpose that I am aware of at the time.

It may not be easy to define or to describe precisely what it is by which we decide or discriminate between acts that imply intelligence and acts that do not. But that there are the classes of acts and that we do, somehow or other, discriminate between them and feel the utmost confidence in the accuracy of our discrimination, admits of no doubt or denial. All men do it, and there is no thought or intelligent action without it.

If now I look abroad into nature I see the same thing there. As truly as light, heat and electricity do their work, so truly are there *laws* by which they work. All objects are capable of classification and of coöordination and subordination into classes. All can be ranged in order of succession, one after the other as cause and effect, or at least as antecedent and consequent. All are in harmony as parts of wholes, adapted to each other, working and coöperating with each other. All are in this respect, at least, like those acts of man that proceed from purpose and are accompanied with and guided by intelligence, though, perhaps, I cannot say more precisely than I have done what is the sign or work by which we so regard them. But they all have their work; nowhere do we see a fact that, like some of the acts of our fellow-men, does not imply intelligence and the presence of mind.

It is, however, to be considered that among the acts of our fellow-men that presence of purpose and intelligence on their part, when they perform them, is necessary to their being intelligible to us. We can understand what they do when they act purposely and intelligently; but when they act otherwise we can see no meaning in their acts; we cannot understand them; we account for them only by supposing them to have been without purpose, undesigned, the result of the limited action of the human mind, which still acts all the time, without *fully comprehending* much, if anything, of what it really does.

But if, in nature, we find anything that we do not understand—anything that we cannot name, and to which we cannot assign a cause or

law, we never for a moment suppose it to be a fault of nature. We take the blame to ourselves—accuse ourselves of ignorance; we forthwith set to work to find out and comprehend the phenomenon.

Now, in all this we not only believe in the reality of intelligence in ourselves, but we act on the assumption that *there is intelligence in nature*, that its facts and phenomena proceeded from intelligence, and hence are intelligible to us, if we are *not* ourselves at fault in the matter.

Intelligence then is as real as force, and proved to be so by the same line of observation and argument. *The one line begins with the observed facts, the other with the fact of observing*; or, in other words, the one begins with facts of outward nature, and the other with the facts of consciousness.

I have already spoken of will or purpose as one of the facts of consciousness in man, and as implied and manifested in the phenomena of nature. I might go on and speak of benevolence or love also, and show how, from the consciousness of it in ourselves we form an idea of it, and thus recognize it in the acts of our fellow-men, and, finally, in the arrangements and adaptations of nature.

Now, whence comes this intelligence and these moral attributes? Intelligence is in man *now*, but man has not *always* been here. The earth existed long without him. There were order and law, harmony and completeness of intelligibility in the phenomena of nature long before man appeared. Where was intelligence then? It is inseparable from man, or at least from animal life *now*. In whom or in what did it reside, and by whom or what was it exercised in the long geological ages before man appeared? Or was there none? Is it not the fact rather, that all error and mistake—all disorder and confusion have come *since* man made his appearance, and from the imperfections of his intelligence and the perversity of his will? Is it not these very imperfections and deficiencies that attract our attention, and make us think of man as intelligent and capable of doing much better, that point out the contrast, and enable us to see the perfection of intelligence, of will and of benevolent purpose when they exist? Nowhere in nature, before or after the appearance of man, do we see any of those acts, events or phenomena which in man imply thoughtlessness, want of aim or purpose, or anything that looks like a want of the perfection of intelligence, purpose and power. An event without a cause—a fact without a law—an object that could have no name, and be referred to no class, would be more miraculous than a miracle; for even miracles have a cause and a purpose, though that cause and purpose are above nature.

It is especially worth noting that what impresses us with the fact of man's personality, his intelligence, and his will, is *his faults*, his imperfections, his short-comings, and his efforts to meet the emergencies and avert the evils that are occasioned by them. It is these things that separate man from nature, and make us think of him as a *person*—as a power different from nature; in some sense above it, and interfering with it. His perfections are his points of harmony and uniformity with nature. But it is his defects and his faults that make his personality *conspicuous*. What he does to remedy them, rather than what he does in the smooth harmony with nature, impress us with his power, and inspire us with awe at his greatness and his genius.

We have these four at least: Force, Intelligence, Benevolence, and Will, besides mere, tangible, inert matter; they are all invisible, all intangible, all imponderable, all real and substantial, with

the same kind of reality the one as the other. No one of them can be denied more than the other. What shall we do with them? Have we four gods? Shall we turn polytheists, and make a new mythology of our own?

Let us see: the terms are all abstract; they denote modes and qualities rather than real substances or personal agents; there is no intelligence without an intelligent being. Will, without a person, is inconceivable.

And "force," too, is an abstract term; or rather it is both abstract and concrete; sometimes the one, and sometimes the other. And in this ambiguity of the term lies, as I think, all the plausibility and apparent force of the argument of the naturalists. Force is like strength. We speak of the force *with which* "any cause acts"—the force *with which* the earth attracts the moon, for example. Here the word is clearly abstract, and denotes a mode or quality of the earth's action upon the moon.

But when we speak of heat and light, of affinity and gravity, as "forces," we use the word as though it were concrete, and of the same logical quality as the word "cause." We should not use the word in that way, if we would avoid error. *Causes act; force is merely the intensity with which they act.* Hence these men should not speak of force as acting at all—not of matter and *force*, but of matter and *cause*.

Note further the difference between the two words. We speak of the force with which the earth attracts the moon—the force with which sulphuric acid acts on copper, etc. But we never say "the cause *with* which these or any other agents act. And, in fact, sometimes the earth and the sulphuric acid are spoken of as "causes," not as "forces." Force is never a cause; it is only a mode or the intensity with which causes act. Force is not something separate or distinct from matter any more than fluidity is from water, solidity from iron, or thought from mind.

Correct this fallacy, and use the words "force" and "cause" each in its proper sense, and according to its proper logical quality, and we have not the simple formula—"matter and force;" but we have the confessed fact that the phenomena of matter, and of material changes, imply a cause which is not matter; and a cause too, which, of necessity, must be a first cause, or an uncaused cause. And are not these others—"force"—"intelligence"—"purpose," etc., attributes of this first cause? They cannot exist alone; they must inhere in something; what shall it be? Not matter, certainly. Is it the first cause then? Either that, and we have one God—omnipotent, wise, and good—or we have a mythology of many gods, as many as there are attributes or properties of matter, or as many, at least, as we may choose to make.

We have then sufficient grounds for religion and poetry and art, as well as for science. There is room and a call for them all. Each supplies a want of man's nature; each supplies the element that is necessary to his culture; each contributes in its own way to his happiness; each does something for him, without which he is less a man in this world, and less fitted for any worthy destiny that may await him in the world to come.

And they must be in harmony, too. The time is fast coming when they will see the need of each other, when all the jealousies and rivalries of their respective devotees must cease, and neither of them can say to the other: "I have no need of thee." Science is incomplete without philosophy, and neither art, nor poetry can have any life without religion.

There are those who appear to take pleasure in speaking of "the conflicts between religion and science." With such I have no sympathy; for such conduct I have no approval. Doubtless there have been ecclesiastics, as there are now politicians and scientists, who would be glad to suppress all thoughts that they cannot control; but, like the faults and follies of beloved friends, I would speak of such things as little as duty will permit, and forget them as soon as possible. No, I prefer to take the kindest view of the mutual relations of the two great departments of human thought—the two chief means of human progress and human welfare—science and religion.

I sometimes represent them to myself in this wise: Suppose two men approach one of the great manufactories of modern times: the one, devoutly inclined, sees the raw material—the cotton, the wool, the iron—go in at one door in a form of little or no value, and come out at the other manufactured into most attractive forms, and capable of the highest usefulness for men. He sees also the mighty steam-engine, with its more than superhuman strength, and is told that it is the *steam* that does it all—the steam that makes this mighty transformation—this estimable contribution to the sum of human happiness, and he exclaims: "Great and beneficent is the mighty power of steam—no living without it." The other man, we will suppose, is of a different turn of mind. He is cautious, sceptic, has acquired some ideas of science, and knows something of mechanism already. He approaches the mill; sees the same transformation of raw material into useful commodities. He *enters* the mill; sees everything in motion; the wheels, the bands, the gearing; he studies the movements, the velocity, the precision of each part, and can account for every result. He goes away impressed with the wonders of *machinery*. He exclaims: "Great is the power of machinery! It works wonders. Man could not live, except, perhaps, as savages or brutes, without it. Great and wonderful is the power of machinery; there is nothing in the world like it; perhaps nothing but it. Why, even the mind of man, with its faculties and powers, is but a *machine*. The State is but a machine for political and social ends. The universe itself is but a machine. Observe its laws; consider its regularity and uniformity; all is as regular and uniform as machinery can make it."

And so both of these men are right. But they are, each one of them, only half right. Each sees one element of the truth. The steam could do nothing without the machinery, and the machinery could as little do anything without the propelling power of the steam. Nature is regular and uniform; as much so as any piece of machinery that man ever devised, or can devise. But without a power in it, or behind it; without a force, a God to move it, it is dead and motionless, powerless—perhaps non-existent.

And so, too, God does nothing without means—machinery, if you choose to call it so. Even in His universe He works through natural means and agencies, and in accordance with natural laws. And in the last analysis, if it only starts with a complete inventory of *all* our thoughts, we find that we can have no conception of God without nature, or of nature without God.

But, in conclusion, I have one thought more, which, however, I can only suggest for the consideration of the thoughtful.

With the Hebrew dispensation began a new era for man—a new departure in humanity. There was now recognized the fact of creation, the doctrine of a *moral government*, and the hope of blessing and happiness.

ness in consequence of moral purity and uprightness, and integrity of heart; these influences prepared a "peculiar people" for the coming of another and greater epoch. Idolatry was at an end among them, and moral purity had become an instinct—a second nature. Christ threw down the partition walls, inculcated the fatherhood of God and the brotherhood of man; the apostles went forth to gather into this new fold all such as the spirit, coöperating with their preaching, should call; or, in other words, all who, appreciating the purity of life and the hope of immortality which the apostles preached, were willing to submit themselves to this new dispensation of life; the church was established far and wide, the spirit wrought within; and when modern history first dawned on the world, it found a people "peculiarly prepared" for this new era; and we have poetry and art such as the world had not seen before. And we have science, too, such as antiquity knew nothing of; and such as no nation outside of christendom has attained, or can even now appreciate and appropriate to its own uses.

Now, I hold, that religion has done all this for us. It is the religion of the Jew, first, and of the Christian afterwards, that has wrought this *change in humanity*; and made this wonderful and most beneficent development of science possible, on this earth and among these fellow-men of ours, and made our brothers, our neighbors, our contemporaries, participants in the common inheritance. Religion has made modern history, with all that characterizes and distinguishes it, possible.

But religion owes a debt to science, too, which I fear its friends and advocates do not always consider and acknowledge.

Religion, without scientific thought, is sure to degenerate into puerility and superstition. I think we owe more to the scientific spirit which began to be active in the thirteenth and fourteenth centuries, for whatever there was that we approve and adopt in the Reformation, than to any other one cause; the Holy Scriptures had been known before, as they are known now, by those who do not accept the principles of the Reformation; the Fathers had been read and studied before, as they were then and have been since. It is true that the revival of the study of the Greek and Latin classics had much to do with the movement. But I believe that the spirit of scientific inquiry and investigation, the habit of observing and thinking, the common sense, the practical sagacity, the testing of things by their obvious results, the requiring an intelligent explanation of what we are to accept and a satisfactory reason for it, which the scientific habit encouraged and demanded, did more, under God, to bring about the more rational, and at the same time the deeper and sounder views of man and of his relations to his Maker, which have characterized the religion of Protestants since the dawn of the Reformation. Nay, I believe, that if, to-day, we could transfer the scientific spirit and the scientific attainments of our well educated people into any region of heathendom or of savagery, their polytheisms, their superstitions and their fetishism, would at once disappear, without so much as the preaching of one word of Christianity to them.

But, to be a little more specific, in ancient times and until quite recently, all the phenomena of nature were supposed to be under such an immediate and personal control of God, or the gods, as in heathendom, that our idea of law—regularity and uniformity—was excluded. Of course, I believe in "*God in nature*." Nor has science yet taught us anything that inspires a doubt that there is a providence in the affairs of the world; in those things on which our health and our wealth, our

successes and our failures depend. But before the days of modern science, it was customary to expect miracles and interpositions everywhere. Now, science has taught us that there are laws and sequences in nature so uniform and so inflexible that no providential interposition will avail either to avert the consequences of the neglect or transgression of nature's laws, or to secure to us the benefits of their observance without having obeyed them. We have learned that it is of no use "to serve God" and neglect nature—to pray for health and neglect cleanliness and the cause of disease. Malaria and infection will be left to do their work, notwithstanding any amount of piety or of prayer. Health and prosperity are *physical* conditions which we must look to science and not to religion to make known to us. Believe in God and worship him, but study nature and obey its laws—God's laws in nature—as well as His will as revealed in the Holy Scriptures.

But then the spirit of science, while it is positive and affirmative *in its appropriate sphere*, becomes negative and contradictory, if not even blasphemous and scoffing, the moment it transcends the proper boundaries of that sphere to speak of things spiritual. Hence science, as well as religion, should recognize its appropriate sphere, acknowledge the limits and boundaries of its realm, and stop when it reaches them. Like man and wife, each and both are good, and should be mutual helps to each other. But they each have a sphere of their own; the man can do best with out-door affairs, but when he enters the domicil he finds one there who can do what belongs to that sphere—what he would but in vain attempt to accomplish. Or, to use another comparison, science and religion are like two kinds of food, each useful and necessary to health. We need religion and we need science, but neither alone will satisfy our wants and give perpetual health. Either alone, like only one article of diet, will produce dyspepsia, disease, and finally death. But both together, in due admixtures, and properly tempering and modifying each other, will give health with long life, and the fullness of rounded and complete development of the soul.

The old Hebrew prophet saw God in nature and was devoutly reverent. The modern scientist has discovered evolution. But he has discovered, too, that there can be no evolution without force. And we have seen that there is just the same evidence of intelligence and benevolent purpose as there is of force. But these four—force, intelligence, purpose and benevolence—are but attributes of some concrete reality. Put these together, and we have a personal creator and moral governor of the universe.

And there are gaps or leaps, too, in the process of evolution, as at the origin of life, the diversification of species, the beginning of mind and soul in man, over which no power of mere force can carry us. We can no more explain the ice age and glacial epoch in the present state of science than the incarnation and the origin of Christianity without a miracle. *God in nature* appears to be the only rational solution: God its force, nature His operation, with law and order and subordination everywhere, as proofs of His wisdom, His goodness, and His power.

GENERAL AND SPECIAL CULTURE IN OUR SCHOOLS AND COLLEGES.

[Read before the University Convocation in July, 1877.]

By Professor WILLIAM D. WILSON, D. D., LL.D., L. H. D., of Cornell University.

It is an old saying—I don't know how old—that "life is short, but art is long." We moderns have much better reason for saying that "life is short, but science is long." There is so much of it that no one man, however gifted, and however industrious and persevering he may be, can hope to master it all. And we, therefore, infer that it is better that each one should begin early—select his specialty at the very beginning, perhaps, even *before* he begins at all, and devote himself unreservedly and exclusively to the department he has chosen as a profession or a pursuit.

It is, indeed, true that the realm of science has become so extended of late that it may be divided into many separate kingdoms and sub-kingdoms, each one of which will be broad enough and deep enough to occupy all the time and attention of any man. It is true, moreover, that he must devote himself pretty thoroughly to some one of them, if he would master all that has been obtained and done in it, without so much as a thought of doing anything to extend its borders, or to make new conquests in the unexplored regions that lie beyond.

Hence the conclusion is confirmed: "Begin early, devote yourself exclusively to the one department you intend to master, and in which you hope to excel."

But I think this advice is a mistake, and that its evils are manifold. It is the object of this paper to point out some of them, and to suggest reasons for laying the foundations for success and greatness in a deeper and in a broader culture.

No doubt great specialists are of great use to mankind. We are chiefly indebted to them for the great strides forward which science has made. Slow and gradual progress may be due to the toils of the very moderate minds. But the discoveries and generalizations that mark eras and make epochs in the world's advance, are usually made by specialists, who are not only thoroughly devoted to their one department, but such men are too often characterized by narrowness and bigotry, in regard to all other departments of knowledge. In regard to other matters, they are not well informed, and are often hasty, dogmatic, perverse, and reckless.

Talent is undoubtedly a good thing; genius is a rare and priceless gift; but humanity is better than either, and worth more than both of them put together. We make a great mistake for ourselves—though the world may sometimes be the gainer—when we sacrifice manhood to mere attainment, or greatness in any special line or department. For *the world* the genius of a Newton, a Cuvier, a Huxley and a Darwin may be of inestimable value; for the men themselves it is but the chaff, that the winds will blow away with their breath, or will be consumed in the fire unquenchable that is to try all men. Manhood only remains—manhood only is eternal. It only abides all time and change, the source and fountain of all that is worth having or pursuing. Huxley and Tyndall are, doubtless, great as specialists and their praise is in all mouths; great as men of science and of genius; but as to their manhood or manliness

the world knows much less. *I* know nothing ; they may be as good and as great in this line as in the other ; but if they are not, they have sacrificed the best part of all that man can be or become for what is not worth *to themselves* the breath of an hour's inhalation.

Hence, I believe, that at the very outset there should be laid a foundation of broad and generous culture. First, the man and his manhood, with their appropriate culture, and then the specialist, the engineer, the statesman, the naturalist of whatever department of natural science.

Precisely what and how broad this foundation-culture should be, it is not so easy to say. For the great mass of mankind, "the rank and file of humanity," the common schools are and ever must remain the chief means of education and school culture. Make them as good as you can—carry the studies as far as the talents of the pupils and the time at your command will allow.

Above these establish and sustain academies and high schools ; make them as thorough and their course of study as broad and as complete as possible ; limited not by pecuniary means (for there should be no limit here), but only by the capacity of your students and the amount of time they can give to studies of this grade.

And above these in the order we are now considering—though *below* them both in the order of public importance—build; endow and administer colleges and universities, for those who can give more time, and can profit by a broader range and a deeper prosecution into the principles and methods of knowledge.

My object in this paper, however, is not to speak for the great mass of men who aim only to become intelligent and useful—without thought, hope or prospect of becoming what the world calls great—but rather of those who hope and expect to place themselves among the foremost, if not in the very advance of their chosen line of study.

I suppose the course of study in our common schools is about as good—nearly as good as the case will now admit. If not, it will improve as the improving condition of the people enables them to see its defects, and prepares them for improvement in this respect.

And for those men of rare endowments of whom I am chiefly speaking, this curriculum of general culture is a great benefit, though it very often seems to them slow and tedious and pedantic, fitted for men of mediocre capacity, rather than those who can make such rapid strides and leap such immense chasms, as they find they can accomplish. It seems to them time wasted—entirely wasted and thrown away—to linger on elementary studies—to go into such details of grammar and mathematics—of mere matters of fact and formulæ, when they can master, as they think, the great principles in a few hours' reading.

Now I readily admit, that if a boy is not capable of anything more than a mastery of these details, of committing to memory and retaining them, the forms and formulæ, the rules and declensions of grammar, its propositions and rules, formulæ in mathematics, the names and dates in history ; if, in a word, he is capable of nothing but learning and remembering, the schools of the lower grades I have spoken of may be all of which he has need.

But then the man of genius, or the boy who is to be "a genius," has need of this training and discipline also. In all departments there are primary facts to be remembered—there are fundamental axioms to be accepted on trust, for a time at least ; formulæ that must be used before they can be fairly understood. And the very habit of preparing for a

recitation, and even that of "*cramming*" for an examination, in which we are to repeat only what we know, and know, too, from having learned, are of use; they are, in fact, what we all have to do all our lives long. I use the word designedly when I speak of "*cramming*." If it is merely to catch a few words with chance of passing an examination in a study, which one has not faithfully studied during the time, the process may be left to all the contempt it deserves and receives.

But the "*cramming*" which consists in a hasty review, under great pressure, and in a state of high mental activity, such as it always is and must be with *good students*, is a kind of mental activity which is of the highest order, and of inestimable value. It compels us to systematize what we know, group it under convenient heads, and get it well in hand for *immediate* use, as if in preparation for an emergency.

Now this is just what we all do—all of us who ever accomplish anything in life; the professor "*crams*" before going to his lecture; the minister "*crams*" before he ventures to preach; even if the sermon be an old one, he never ventures, if he can help it, to preach it without "looking it over" before he goes into the pulpit. The physician and surgeon never go to see a case of any unusual importance without looking up the principles, precepts and prescriptions that have been used and found by use to be safe and useful in such cases. The counselor that should go into court without "*cramming*" himself full with the facts and precedents in his "*case*" would expect and deserve nothing, as he would get, nothing but ignominious defeat. Even in the mere ordinary walks of life the same practice prevails. I suppose no young gentleman goes to make a call without taking some thought beforehand what he shall say; and whether young or old, we seldom meet any person whom we expect, and with knowledge beforehand that we are to meet that person, without considering beforehand what we shall say—what subjects we shall speak of, and what it is best to avoid mentioning. In fact, we do nothing *well* without "*cramming*"—except, perhaps, those impromptu things which for most persons are quite as likely to be bad and wrong as to be good.

Hence, preparing for examination—"cramming," if we choose to call it so—is a good habit to learn, though it may be a tedious one to acquire; and the boy, however bright, who has gone through the prescribed curriculum has acquired this habit—this mastery over what he has learned—this power of ready use of what he has mastered—on which, for all the practical purpose of life, its value depends. He has learned how to be ready at a moment's warning; how to meet emergencies; how to concentrate his thoughts, and bring all that he knows to bear on a given point in the shortest possible space of time.

But it is said that it is a waste of time to take a boy over a subject that he has no special taste for—one in which he can never attain to a point above mediocrity, if he can even attain so much as that, and one, moreover, which he never intends to pursue, and which has no immediate bearing on the profession he intends to pursue.

I think I have, in good part, answered this objection already; but I wish to consider it for a moment from another point of view; and it must be borne in mind that I am now speaking only of those who have some special endowment or gift, promising excellence in some department.

The various branches of learning are so related by their intrinsic nature that they *have* a relation that is not always seen and acknowledged. They each seem to develop and cultivate some one form of

mental activity, all of which is a part of the manhood of man, and necessary to his completeness and the "well-balance" of his mind, as it is called. With either one missing or defective, he is lame and limps in various ways, and the defect will appear in his proficiency, and in his opinions in the profession he has chosen. Suppose we divide all learning into language, mathematics, logic, metaphysics, history and physical science. No one of these can be pursued successfully and with the best results without the others. It may be true that those who can do nothing more than merely to learn facts and remember them, cannot see the matter in this light. Such persons cannot, of course, appreciate the point I am making. For it is not the facts and formulæ that one may learn, that I am speaking of. It is rather the culture, the discipline, the mental polish, that results from the pursuit of such studies, than anything that will remain in the memory after having gone over them. One, for example, who has mastered in logic the fallacy of ambiguous middle or of accident, is not likely to fall into the commission of those fallacies, or to be misled by them ever afterwards, whether in science or in law, in politics or in religion, though he may remember nothing of the formulæ and technicalities with which they were discussed in his text-book.

But there is one point more to be considered. It is often said that it is not only a waste of time, but positively bad for a boy to undertake what he does not like and cannot do well.

But this objection overlooks the important fact that it is often, and, I believe, always, of the utmost practical importance for a boy—whether capable of greatness or not—to undertake something that he *cannot* do. It takes the conceit out of him wonderfully to find that he does not know it all—that he is not, and is not likely to become, omniscient, a universal genius, capable of everything—a judge and competent critic of all subjects—a dictator in all parts and departments of knowledge and belief. It is an immense gain for others and the world at large that he has learned that there is something that is worth knowing, that he does not know and is not likely to know until he "shuffles off this mortal coil," that so hems us in and hampers all our endeavors here.

It is not so easy to say precisely what this general culture should be and how far it should extend. It certainly should include—no one will doubt this—all the elementary branches that are taught in our common schools and are needed for use in the daily life of all men. Of this there can be no doubt. Our common schools should provide for this; and between these and the professional and technical schools there should be one or two—two, I think, intermediate systems—the academies and schools like them, and, secondly, colleges. I say that I prefer three stages or classes of schools, because, whether we regard the subjects taught or the advancing age and culture of the pupils, there comes a time when an entire change is required in the methods and appliances for instruction. The one must deal with primary facts, elementary formulæ, at rather a slow progress and with great minuteness and care, in stating and illustrating the propositions, with a large amount—almost to the exclusion of all else—of committing to memory and recitation-room drill; the other must branch in two directions, penetrate deeper into fundamental facts, devoting, perhaps, a whole week to the study of the philosophy of the dative case, or the metaphysics of the subjunctive mood, the development of the fornix in vertebrata, or the nature of imaginary quantities in mathematics. And in *the other* direction, there must be the presentation of

broader and more comprehensive principles, grouping large masses of facts under one formula or two, comprehending many sciences in the generalization of one principle, carrying the pupils to a height whence—if they have only the capacity and the previous training that will enable them to do so—they can see all things in their relations and due proportions of subordination, inter-dependence and relative importance.

There is certainly a time in the progress of one's studies, and in the development of his mind, if he ever reaches such a development, when this change should take place. And the change is so great, and the methods of the most successful instructor in each are so diverse, that it is seldom, if ever, that one and the same instructor can be equally successful in both, and the best men in the one are very likely to fail altogether, or, at best, meet with only indifferent success in the other.

But I think that this general culture should include:

1. Languages—Latin, Greek, and the two great modern languages, the French and German. I will not repeat here what has been so often and so well said in favor of the two ancient languages I have named. And I need not say anything of the two modern ones. Their usefulness is too obvious to need a word said in their favor; the only question is in the extent, that these should be made obligatory. I should say about as much of Latin and Greek as is now required for admission to our colleges; and about as much French and German as is or may be acquired in one year, with daily recitations in each.

It is said by many that this is either too little or too much—too much if we are not to have more, and too little if what we have is to be of any use.

If we are to study these languages as a matter of literature, it certainly is too little to be worth anything, except as a beginning to more. But for purposes of science and culture, I doubt if it is worth while for young men in our colleges to devote more time to them. Doubtless, many will soon forget all they have learned, if they go no further. Doubtless, also, only a small part of them will ever make what is called "any use" of them, if they have no more. Well, I suppose about the same proportion would be no better off in either of these respects, with any amount of time or attainment they could ever make in these departments. And then the fact remains that those men in the learned professions and scientific pursuits who would, with any amount of these languages, "make use" of them, will have enough to lay the foundation for more, when they shall have time to acquire them, and especially enough to use, as subsidiary means to their leading pursuits—enough for the purposes of science and investigation, but not enough to make them experts or specialists in that line.

2. Mathematics—I would include in this line, not only the ordinary branches of algebra, geometry and trigonometry, but analytical geometry, and the calculus also. I think it possible to present these two last-named branches of mathematics in a more attractive and comprehensible way than has hitherto been done. But I do think that a knowledge of their modes of reasoning and the comprehension of things, which those methods give, is indispensable—to every man—in any department of science or in the pursuit of any of the higher subjects implied in philanthropy or statesmanship. Any of the text-books are good, but I take pleasure here in mentioning the works of the late Professor Davies. I name these, of course, for the course that is to require the minimum of mathematics. *And I would exact this amount of all students.* It is said

that there are some who cannot master even so much as this. It may be so, but, then, I would have such boys understand that they may be destined to become poets or artists—successful exhorters and politicians—but they have no call, at least, none “from on High,” to be builders—whether of churches or railroads—to be competent statemen, or trustworthy guides in any department of knowledge.

3. Logic and metaphysics—These are really the branches of knowledge or science, which deal with general principles and fundamental laws, the methods of their discovery, their statement and the grounds of their validity. Without these no man rises above mere facts—a mere Grad-grind utility of detail. He has no right to have any theory or to claim to be an authority in matters of opinion at all. Recent examples have impressed me deeply. Darwin collected many “facts” of great interest and value; and others claim for them a theory or doctrine with regard to the origin and present condition of life on the earth. If these men knew a little more logic, they would see that these facts can, at most, prove only a Minor Premise; and that the conclusion which they draw from them, and propose as a theory, calls for and implies a Major Premise, that they have not discovered, and, so far as I know, they have not considered or even so much as suspected to be implied. And yet it is the corner-stone of their theory. Without the fundamental principle, their “doctrine” may be, indeed, “doctrine,” in the etymological sense of the word; but *science* it is not, and it can have no claim to be received as established truth. Huxley, in his recent visit to this country, declared that the theory was as well established as the Copernican system. But, in this, he went far towards destroying all the confidence I had in him. He compelled me to suspect that he does not know what constitutes proof, or the satisfactory establishment of any theory. Suppose we have, in successive order, orohippus, miohippus, mesohippus, pliohippus, protohippus, hiparion, and horse, in the same locality, who knows, or possibly can *know*, that one was the progenitor of the other in succession from the first to last? Who knows what cataclysms have swept over the habitat where they lived, or what changes may not have swept the one off, without replacing it by the other, until after some act of creative power had intervened, over which no line of lineal descent had passed or could have passed?

I think these men would have been not less useful, but a little more cautious in asserting theories, if they had been trained a little more severely in the sciences which treat of the nature and process of working out theories, the grounds of certainty and the foundations of truth.

4. Of the physical sciences I shall say nothing here. The course should certainly include a survey of the whole ground that is now covered by them, and thus prepare the student to keep up with the progress that is daily being made in that department.

5. Finally, I will say a word for the social sciences, including not only moral philosophy and political economy, but history and law—constitutional, international, and municipal as well.

In this country everybody is a citizen; every man is a voter; and most of them either hold, or expect to hold office; they are “ready and desirous” of holding office. But to hold office, or even to cast a vote in ignorance of what these sciences teach, is to be a physician without knowledge of physiology or chemistry, a lawyer with nothing but some elementary text-book of practice and rules of procedure, a clergyman with nothing but his form-book, and the weekly religious

paper of his denomination. It is worse than that; it is more like children playing with edge-tools than either of the other comparisons I have made.

Now, it is undoubtedly true that it is idle to expect that the great mass of our citizens can be educated in these things. But to say nothing here of our academies, it does seem to me that our colleges should not allow any man to go forth from their walls with a diploma of theirs in his hand who has not had some rather well-considered training on these subjects. It seems to me that the State, which has enriched most if not all of them with more or less of its bounties, and extends to them all its protection and fostering care, ought to require this much of them at least in return for what she has done for them. We want STATESMEN—*it is a great want of the age.* Politicians we have in abundance; office-holders sufficient for all our needs; but of statesmen there is a most plentiful lack, here and anywhere in this age, as indeed there has been in all ages.

I would not propose any legislation on the subject of this paper on the part of the State. Colleges and universities may take the hint and act on the suggestions I have made, if they think it best to do so. But my aim has been chiefly to make some suggestions to the educators who are here present, and to the young men of our country who are seeking or willing to receive advice as to the best way in which they can prepare themselves for usefulness and distinction in life. And to all such I would say, do not be in haste to enter upon your special calling. Lay the foundations broad and deep. Provide yourselves with all the tools you may have occasion to use. Possess yourselves of the keys that will secure admission to any realm or department of knowledge which you may have occasion to explore for the means of your success, and even if there are some sciences that you do not acquire so easily as you might wish, do not neglect them; you will appreciate yourselves more justly, and others far more highly, for finding that there are some things eminently well worth knowing, which others, your inferiors, perhaps, in most respects, can nevertheless learn much more easily than yourselves.

And I would advise all men who have a chosen pursuit to keep up a knowledge of and an interest in others. It is good for the health of the mind. It is good for one's morals as well as for his manners. It helps to elevate the man above the calling or the profession. It is a relief to weariness, and will add new and fresh interest to your peculiar pursuits. It will enable you to understand what you know better, and appreciate it more justly. No man can live to himself alone, and live wisely or well. Nature is more than art. Manly development and culture are more than science and mere attainment. *If we would know thoroughly and well any one thing, we must know something of nearly everything else.*

A FEW THOUGHTS UPON HORACE.

By Professor CORNELIUS M. O'LEARY, A. M., M. D., Ph. D., of Manhattan College.

In the storehouse of the memory are many pictures long hidden away, dust-covered, with their faces, as it were, turned to the wall and their lineaments dark and silent as the night. These we bring forth from dingy corners, as occasion or desire prompts, and gaze upon them with a fondness which no new image, however exquisite, can enkindle. We hang with quiet rapture on each familiar line, we live the past over again in each fondly recalled feature, and as we do so, the roses bloom once more and the nightingale sings by the calm Bendemeer.

Anxious to scan the outlines of such a picture, hung away long ago in the unthinking lays of boyhood, the writer approaches the subject whose title heads this paper, and invites the reader to join him in glancing over a few beauties of Horace, taken hap-hazard like phosphorescent gleams which catch the eye uncourted.

In every author there is much more to be taught than what the text exhibits on the surface ; there is a meaning between the lines which a casual glance does not reveal ; in a word, frequent and prolonged meditation alone can bring to light the full purport and subtle meaning which authors' words vainly strive to express at sight. That the average student should bestow on the printed text of an author the closeness of attention requisite to unearth its hidden treasures is more than can be expected, and it undoubtedly is no small part of a teacher's function to take the aspiring neophyte by the hand to guide his tottering footsteps through mazes which his own feeble lamp cannot fully light, and to point out beauties and meanings which his own ken is powerless to behold. The necessity of this procedure must be all the more evident when it is question of a work written in a foreign language by an author who addresses a highly cultivated circle, and who delights to compliment his readers by making them feel that an allusion or a suggestion is quite sufficient to render his meaning clear. Such an author is Horace, and such is the character of the text which has made the bard of Tivoli the delight of every generation since the days when he lived and loved and wrote. It is beyond question that, unless a judicious interpretation of the hidden meaning of Horace comes to the aid of the struggling student, in vain will he trim the midnight lamp for study and wrestle with the beauties of the *Carmen Seculare* or the "long-impeded march" of an ode to boon companions. Under and through all that Horace wrote there runs a strand of meaning which calls for a fuller exploration than a single perusal enables us to make. The delicacy of his touches is apt to elude our first grasp, and a sympathetic mood (the result of intimate acquaintance), is indispensable in order that he may soothe us with his finer fancies, and touch us with his lighter thought ; even then the quintessence of his spirit does not always penetrate our breasts—the aroma of his wit is too fine and fugitive to loiter long in many hearts. Lord Byron himself owned that some unseen but impassable barrier separated him from Horace, a fact which he thus sorrowfully notes :

"Then farewell, Horace, whom I hated so,
Not for thy faults, but mine ! It is a curse
To understand, not feel, thy lyric flow,

To comprehend, but never love thy verse,
 Although no deeper moralist rehearse
 Our little life, nor bard prescribe his art,
 Nor livelier satirist the conscience pierce,
 Awakening without wounding the touched heart—
 Farewell! upon Soracte's ridge we part."

There is, indeed, beneath the *curiosa felicitas* of Horace a subtlety of the most elusive sort, which made him despise as the common herd those who could not seize it. *Odi profanum vulgus et arceo*. A philosophy as deep and pointed as that of Juvenal's lurks in his most playful sallies. *Ridentem dicere verum quid retat?* Like the fabled music of the spheres, that heavenly diapason which cannot be heard because no discordant note jars its symphony, the philosophy of Horace often escapes observation, so perfect a mirrorment of nature is it. With more justice even than Juvenal he might have written: *Quidquid agunt homines, votum, tenui ira voluptas, gaudia discursus nostri est farrago libelli*, for surely he has laid bare the human heart with a sharper scalpel than most dissecors wield, and though he uses anaesthetics while he probes, and never wounds where he cuts, *circum proecordia ludit*, yet he has not failed to bring before our eyes every nook and cranny of that little organ no bigger than a man's fist, which holds the pent-up passions that so often shook the world to its core. He deftly touches each chord of our nature, points out to us our own weakness in others, and when the truthfulness of the picture cannot be gainsaid, he laughingly pokes us in the side, and exclaims :

"Change but the name,
 Of thee the tale is told."—*Francis*.

"Mutato nomine" :

"De te fabula narratur."

Do we need a homily on the folly of wasting our energies in the pursuit of wealth, what more forcible protest against such madness than is contained in the first satire?

"No more than mine
 Thy stomach can contain."—*Francis*.

*Non tuus hoc capiet venter plus ac meus : * * ** is the pitliest resume of the reasons why we should eschew that inordinate love of gain which makes the miser's life a torment. What though we scour the seas in quest of delicacies, of mullet, turbot and pike, and bring to the groaning table the peacock and the wild boar. *Animal propter convivia natum*, as Juvenal calls him, does not the cold and hard physiological fact still remain true, that the capacity of the human stomach is ever the same; that the fastidious gourmet as quickly exhausts his pampered appetite as the lean and hungry slave who feeds on the refuse of his master's table; nay, is not that desire a curse which finds a bar to its fulfillment in mere physical impossibility, and is not the pleasure of satiety, which seeks nothing beyond the gratification of present wants, comparatively unalloyed? And not only is the hope of the miser, that he will amass ingots enough to satisfy the cravings of his heart, doomed to bitter disappointment, but his endeavors to do so insure for him the odium of those whom nature had ordained to be his fast and fondest friends. And the penalty is a just one, Horace tells us, for what wonder is it that both wife and child and neighbor, both the romping boy and the giggling girl of the adjoining street regard with disfavor, him, in whom the

accursed thirst of gold had dried up every well spring of human sympathy and affection, had soured the sap and succulence of human kindness.

"Be it my fate, as Heaven in bounty please,
Sill to be poor in blessings such as these."—*Francis.*

(Horum semper Ego optarim pauperrimus esse bonorum.)

Yet while he thus inveighs against the hateful vice of avarice, he by no means advocates a reckless disregard for the value of money. In his admirable ode to Crispus Sallustius, he tells us that the temperate use of the shining coin is the road to many a rational and substantial pleasure.

" My Sallust, say, in days of dearth
What is the lazy ingot worth,
Deep in the bowels of the earth
Allowed to settle ?
Unless a temperate use
Send forth the shining metal.

Cans't thou command thy lust for gold ?
Then art thou richer, friend, fourfold,
Than if thy nod the marts controlled
Where richest trade is,
The Carthages both new and old,
The Nile and Cadiz."—*Prout.*

So the old incumbent of Watergrass Hill renders the happy thought of Horace, and though the good father soars not on lyric wing, he loved the Venusinian enough to have caught and glowed with the spirit of his fancy.

But in all other things, as well as the quest of gain, Horace proclaims himself the friend and apostle of moderation. An epicurean by choice he was a stoic by natural inclination, and like the founder of his sect, placed the essence of enjoyment in the moderate use of the means which contribute to it. When he praises the juice of the Cæcuban grape, or urges his friend Thaliarchus to bring forth the two-eared jar, he never fails to recommend a wise moderation. He utterly abhors excess in wine, as in aught else, and depicts its evil in such language as leaves the most ardent temperance reformer nothing to supply. Thracians were notoriously quarrelsome persons in our poet's day, and he the lover of peace, the reconciler of estranged friends, finds no meeter likeness to the turbulent inhabitant of the Chersonesus than the reeling bacchant fresh from his maddening orgies.

" Hold ! Hold ! 'Tis for Thracian madmen to fight
With wine cups that only were made for delight.
'Tis barbarous—brutal ! I beg of you all
Disgrace not our banquets with bloodshed and brawl."—*Martin.*

This, or the more lyrical translation of Prout :

" To make a weapon of joy's cup, my friends,
Is a vile, Thracian custom ;
Shame on such practices !—they mar the ends.
Of calm and kindly Bacchus. Bloodshed tends
To sadden and disgust him."

(Natis in usum lœtitiae scyphis
Pugnare, Thracum est. Tollite barbarum
Morem, verecundumque Bacchum
Sanguineis prohibete rixis.)

He was not, indeed, a teetotaller ; but it is pleasant to reflect that, at a time when Christian virtues were unheard of, he, the witty philosopher

of Tivoli, had struck the key-note which many hold to mark the boundary line between a practical anathema of the grape juice and the accursed vice of intemperance. In the twentieth ode of the first book, he thus playfully rallies his saddened friend, Mæcenas, and writes him to dispel dull care in a manner at once rational and moderate, while conveying a delicate compliment to the superior quality of the Sybaritic knight's cellar :

" Our common Sabine wine shall be
 The only drink I'll give to thee,
 In modest goblet, too ;
 'Twas stored in crock of Grecian delf,
 Dear Knight-Mæcenas, by myself,
 That very day when, through
 The theatre thy plaudits rang
 * * * * *
 Old Cœcuban, the very best,
 And juice in vats Calenian pressed,
 You drink at home, I know :
 My cups no choice Falernian fills,
 Nor unto them do Formia's hills
 Impart a tempered glow."—*Martin.*

His appreciation of the philosophic virtue of moderation does not, however, prevent him from reveling in those sentiments of which excess is but the sublimest expression. Friendship is chief among these, and no bosom ever swelled with kindlier feelings towards those whom he called his friends. Their images haunted him in sleep, and the thought of them lent a deeper mellow to his waking hours. He loved his friend in deep earnest, and had rather serve him with his life than once make light of him with the silent smile of slow disparagement. In the whole range of lyric poetry we will look in vain for a more eloquent outburst of friendly regard than the ode to Virgil—Virgil whom he fondly calls the half of his soul :

" May love's own planet guide thee o'er the wave !
 Brightly aloft
 Helen's star-brother twinkling.
 Galley ! To whom we trust, on thy parole,
 Our Virgil,—mark
 Thou bear him in thy bosom
 Safe to the land of Greece ; for half my soul,
 O gallant bark !
 Were lost if I should lose him."—*Prout.*

As a friend, he was more in "love to friends than in open hate to foes." There is a joyous exuberance of love in all his allusions to those who helped to make bright the pathway of his life. In journeying with him to Brundusium, you feel that he is preoccupied ; that a secret anxiety consumes him ; and it is not till the *Postera lux gratissima* dawns that you discover the reason of his solicitude. The rosy-fingered Aurora crimsoned the eastern sky with a deeper blush when Plotius, Varius, and Virgil meet the tardy traveler at Sinuessa :

" *O qui complexus et gaudia quanta fuerunt,*
Nil ego contulerim jucundo sanus amico."

When some passion mayhap subdues the soul and sweeps in harsh notes over its chords, the tender pleadings of friendship are disregarded ; but when reason resumes her sway, then Sanus, the wise man, finds nothing to compare to a pleasant friend. In the estimation of Horace,

a friend is the epitome of all that is pleasant and sweet in life. The friends he had, and their adoption tried, he grappled to his soul with hooks of steel. Given such a friend and the cool retreat of his Sabine farm, far from the madding crowd of the metropolis, he would sing "*Io Pean*," from the egg to the apple, or "oh, if there be an Elysium on earth, it is this, it is this." From such a picture the thoughtful student may be taught to gather more than one lesson of practical wisdom. He beholds the accomplished man of the world, the idol of the most cultivated circles, anxious to escape from the frivolities of city life, and longing to commune in unbroken quiet with a friend or two whom congenial tastes had drawn to his bosom. Here, by the moss-covered banks of the limpid Digestia, or 'neath the grateful shade of the Lucretilian chestnut tree, the poet held pleasant and pungent converse with the chosen ones of his heart. We burn to know what sublime thoughts filled the soul of the divine Plato as with enkindled eye he looked forth from the promontory of Sunium on the waves, whose language, perhaps, interpreted to him the existence of one God. The thought has winged more than one heated fancy to dizzy flights, yet all that we know of the Athenian philosopher's ponderings is entirely conjectural. Not so with Horace, for in many a pleasant line does he tell us with what he busied himself in the depths of his delightful retreat. Contentment, cheerfulness, serenity of soul, entire equanimity and contempt for the petty and lowering pursuits of life, were the topics which he discussed in his artless and inimitable way. "Why," he asks, "should we repine because our neighbor's goat has a more distended udder than our own?" Surely, this will not mend matters. How much better would it be to direct our glance at the lot of the infinitely many more who are worse off than we are ourselves. "*Neque se majori pauperiorum Turbae comparet.*" The philosophy of this view of life can be appreciated by all, and no consideration outside of those which a supernatural light supplies, is better calculated to reconcile us to our lot, to make us thankful that it is no worse, and to inspire us with a contentment which is supremely rational. His cheerfulness never flags; through the manifold vicissitudes of life he bears himself with a joyous spirit, lighting up with the radiance of a philosophic temper the cloud which seemed ready to cast a pall upon his fortunes, and moderating the flush of triumph by a reference to its instability. The secret of his philosophy is a secret only to those who cannot perceive in what he wrote a settled purpose to make life contribute to its own happiness through virtue. We do not, indeed, find in his philosophy the sublimity of Christian ethics, but a great deal more good sense than in the systems of many philosophers who, in the noonday light of Christian revelation have presumed to set up a counter tribunal to its teachings. John Stuart Mills' utilitarianism is repulsive, because of the cold formalism in which he has clothed it. He tells us that virtue must be practiced for the sake of the happiness which ensues. Instinct and reason both rebel against a doctrine so formulated; for though no one dare object to the practice of virtue because of the pleasure it engenders, few will agree that such pleasure ought to be the ultimate motive of our actions. Horace is a utilitarian of a different stamp. He teaches that happiness and virtue go hand in hand, and that neither can exist without the other. *Alterius sic, altera poscit opem res, et conjurat amice.*

He does not analyze the sentiment of delight which a good act inspires in order to ascertain whether the happiness or the virtue is to take precedence in the scale of appreciation. Enough for him to know that the virtu-

ous man alone is happy, and that vice reaps its penalty with speed. It is pleasanter to live on good terms with your neighbor than to snarl and carp at him ; and while it is pleasanter it is certainly at the same time more praiseworthy. Should that neighbor possess some peculiarities of manner or demeanor that offend your fastidious taste, it surely is wiser to find an excuse or mitigating reason for what you do not fancy in his conduct than to sneer at him. The Christian who does this, animated by supernatural considerations, practices the sublimest of all virtues, the virtue of charity ; with Horace it is philanthropy, the same in kind but not in degree, as the charity which was preached from the Mount.

It is certainly magnanimous to conceal the defects of our friends, or if they be too transparent to admit of concealment, at least to cloak their grossness or to divert attention from them. This is precisely what Horace does ; he invites us to comport ourselves towards friends in the spirit of the fond father who bestows on his bandy-legged boy the name of Varus because that Varus, though similarly deformed, was a shoot from patrician stock—just as a father of our own day might compare his scrofulous child to Dr. Johnson, or the chivalrous monarch of France who, when defeated, exclaimed : “*Tout est perdu sauf l'honneur.*” And as with bodily defects so also should we deal with intellectual and moral blemishes. If we find that an otherwise upright and worthy man is afflicted with some congenital or acquired trait of character calculated to give offense, we should either hide it from view or glaze it over with a euphemism—

“So, if one friend too close a fist betrays,
Let us ascribe it to his frugal ways ;
Or is another—such we often find—
To flippant jest and braggart talk inclined,
'Tis only from a kindly wish to try
To make the time 'mong friends go lightly by ;
Another's tongue is rough and over free,
Let's call it bluntness and sincerity ;
Another's choleric, him we must screen,
As cursed with feelings for his peace too keen.”—*Martin.*

Hæc res et jungit juncos et servat amicos.

What more comprehensive schedule of conditions for the promotion of true friendship can be conceived than is here exhibited ?

It is the inherent irritability of our nature which unfits most of us for companionship, and in no way can we better soften or restrain this peevish tendency than by following the wise counsels of Horace. But, not content with laying down a line of conduct which doubly gives the assurance of a friend, he furnishes us grave reasons, drawn from the consideration of self, why we should rigidly practice what he thus preaches. The thoughtless man is ever on the alert to discover in his neighbor's conduct some ground for censure or reproach, in the vain hope that he may thus justify his own course, and lift himself above the level along which that neighbor travels. He thus tries to rob virtue of its shining garb, and to clothe it in the hideous rags of vice. Modesty is called awkward bashfulness, prudence is stigmatized as low craft, and a scrupulous regard for truth is sneered at as squeamish. Silly man who hopes in this way to escape the imputation of his own misdeeds ! Does he not see that he thus sanctions a similar course towards himself and invites not only condemnation of his faults but distortion of his virtues. *Eheu quam temere in nosmet legem sancimus iniquam.*

If men once for all would practically assent to the truth that no man is perfect, and that he alone is best who has fewest faults, how many

wrangles, how much rancor and bitterness might be avoided ! No philosopher ever gave more perfect utterance to a pregnant truth than Horace when he uttered the words : *Nam vitiis nemo sine nascitur; optimus ille est qui minimis urgetur.*

At times, indeed, his philosophy soars above the discursive and chatty style, and is couched in terms of nervous vigor and serried conciseness.

Justum ac tenacem propositi virum are words which vividly recall the stern virtues of the inflexible Roman of pre-imperial times, of Virginius, Regulus, Marius and Cato, and might be fitly inscribed over the tombs of the early Christian martyrs. And the youth of our country may here find a lesson than which the peculiar condition of our political institutions can scarcely require him to learn one more appropriate.

The citizen of a republic is, above all others, called upon to oppose an indomitable will, an *as triplex circa pectus* to the foolish clamor of a short-sighted populace, and if he be a true lover of his country his resistance will prevail, or *si fractus illabatur orbis, impavidum ferient ruinae.* Horace has been condemned by some commentators and critics for the looseness which characterized his private life. We do not wish to appear as an apologist for what he has done amiss. He had the vices of his times, no doubt; but he made no attempt to conceal them, and though he tells us with marvelous *naïveté* that he is not *sans peur et sans reproche*, we may take it for granted that he was no worse than his contemporaries—better, perhaps, than most of them, in that he felt an open confession to be good for his soul. The *farouche* Juvenal lashes and lacerates his countrymen for their vices with such an air of seeming virtuous indignation, that had he lived later on one might suppose he was looking forward to the honors of canonization, but the thoughtful reader of history will be strongly inclined to suspect that when he dipped his pen in gall and wormwood, he but added hypocrisy to the vices of which the weeping Flaccus humbly acknowledged himself to have been guilty. However, the student who desires to learn the most salutary lesson of life, which is death, will find far more to such a purpose than the few and scant allusions to the heathenish vices of unchristianized Rome. The pale image of death, *pallida mors*, like the skull at an Egyptian festival, everywhere haunts the poet's footsteps. In sombre mood, as well as in joyous ebullition of spirits, the grim spectre is at his elbow. *Omnes una manet nox et calcanda semel via leti.* He never tires warning us of life's fitful and fugitive passage. In season and out of season he reminds us of it. The thought tinges his most rollicking *chanson* with a strain of melancholy, and in the midst of mirth and merriment the inevitable fact that life is fleeting fast away is flashed on the reader's attention as a thunder-clap in an unclouded summer sky. We have but hinted at the varied treasures of wisdom which a little Elzevir marked *Quinti Horatii Flacci opera* contains. Many, more skilled in the use of the critical pick and axe, have struck deeper into this fertile lode and drawn therefrom rich and shining nuggets where we have brought to light but a few tarnished *echantillons*.

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TREATMENT OF COLLEGE DISORDERS.

By Professor JOHN W. MEARS, D. D., of Hamilton College.

An evil so deeply seated, so inwrought with traditions of college life, cannot be extirpated by violent or repressive measures only. It must be *managed*—no less than denounced. It seems hardly likely that it will ever be suddenly and totally abolished in any institution, or in the colleges of the country collectively; but every wise and faithful effort should be made to this end. Continuous and energetic pressure should everywhere be exerted against the evil. The trustees and faculties of our colleges cannot too keenly feel their responsibility for the good order of the institutions under their charge.

1. The fact that rigorous and severe measures cannot always be enforced, or are not always successful, does not render them inexpedient. Stern and uncompromising laws against rowdyism of every form, and a firm policy in executing them, are the backbone of the whole system of effort against the nuisance. The orderly students, who really come to study, the peaceable, and the timorous, should know that they have the support of such laws and such a firm policy behind them, even if these do not always avail to protect them. Such a wholesale procedure as the suspension of an entire class from Princeton College, in the summer of 1877, for their rude treatment of the incoming Freshmen, was right and judicious, so far as the general policy is concerned, even though the hazing afterward was not only not stopped, but took on a worse form than usual. And the colleges of the land, where this evil prevails, must, in our judgment, make up their minds to run the risk of the *permanent* loss of a whole class, if need be, in carrying out their purpose to preserve order. College authorities are loth to take such a bold step. Possibly it might make one lean commencement day, and leave one place in the triennial nearly blank; but future commencement days and spaces in future catalogues would more than make amends for the temporary loss—a loss the less likely to occur in proportion as the college authorities are ready to meet it.

Should the civil authorities take the matter in hand? If the offenses are of a character which out of college would merit their interference, I see not how they can rightly withhold the exercise of their authority. And there are offenses not now classed as crimes, but only as "college pranks," which tread so close upon the line that it will not be wonderful if they are taken in hand, ferreted out, and suitably punished by the civil authorities. The question is being asked whether the State does not owe a duty to every college district, which she has thus far totally overlooked; whether the youth of the State, massed in these institutions, may not fairly demand of the State a measure of guardianship beyond the moral restraint and influence to which faculties are limited; whether the peaceably and studiously inclined among them may not justly expect a guaranty from the State of sufficient order for the effective pursuit of their daily business, just as much as Christian worshipers may demand from the State an orderly Sabbath; whether the new-comers to its higher institutions of learning are not entitled, if they need it, to State protection against indignities, violent midnight intrusions by numbers of

masked men, and other assaults of the kind. These are the questions which recent events are pressing upon the attention of thinking men.

It is quite true that we professors and students generally would regard the direct interposition of the civil authorities with jealousy. Most assuredly it ought, if possible, to be avoided. But I should not wonder to see the outside world of parents, relatives and friends, and lovers of good order generally, rising up and demanding the interference of the State, if college authorities continue much longer to show themselves incapable of dealing effectively with disorders among their students. But it would still remain a problem how to bring State authority to bear upon this class of offenses.

2. But it is idle and wrong to depend wholly upon the severity and rigorous administration of bare laws in dealing with moral and responsible beings. Mechanical methods and policy must not be conspicuous and obtrusive. This evil must be *managed*, and, if possible, suppressed by management, backed always and of course, (backed, not fronted) by strong and wholesome laws. (1.) Students must have plenty of legitimate work to do and must be held to their work. I am inclined to think that there are institutions where the amount of head work demanded is considerably below what should fairly be required from the average student. The requirements of some of our best female seminaries, so far as they go, exceed those of some colleges; and the young ladies are harder worked than the young men—often, in fact, over-worked. A college which prescribes a full amount of work and which holds the students firmly to their duties, dealing promptly and strenuously with the idle and the reckless, will certainly be in a better position to deal with rowdyism, which is generally (though not by any means invariably) connected with the former mentioned evils. A lame, halting policy in the one case will encourage evildoers in the other.

(2.) Opportunities for working off the superfluity of animal spirits so characteristic of young men must be furnished by means of gymnastic exercises. This point has not been overlooked by our college authorities. A gymnasium, more or less complete, is part of the belongings of nearly every respectable institution. It is difficult, however, to keep up the interest in these sports; and when the college authorities take them in hand and attempt to work them into their system of training, or when the students of various institutions associate themselves together and plan a trial of skill on a great scale, the effect on the studies and the general college life is unwholesome.

A writer in the Edinburgh Review, October, 1877, calls attention to the opinion of one of the most famous of the Greek poets, Euripides, upon the mischief of an undue pursuit of athletic excellence. It is found in a fragment beginning as follows :

“Κακῶν γαρ οὐτῶν μυριῶν καθ' Ἑλλὰδα
Οὐδεν κακίον ἀθλητῶν γενος.”

“Of the myriad evils that afflict Hellas,
There is nothing worse than the race of athletes.”

Euripides goes on to object that even for the body, great athletic excellence was a bad thing; that the athletes were never particularly distinguished for skill or courage in the conflicts of real war; that their old age was generally wretched; and that crowns should be reserved for the wise and good, who were of use to their States and to the whole of Greece.

All this, coming from a source the best qualified in the world from experience to give advice on the subject, is a caution not to be disregarded against esteeming too highly and pushing too far those gymnastic exercises, which are regarded as furnishing a vent for the excess of animal spirits which now takes the form of rowdyism. Nothing is gained by exchanging rowdyism for the regatta. And is it not noticeable that regattas and physical training and athletic sports in general, when public contests are in view, communicate a certain coarse and rowdyish tone to the participants? Are they, after all, in the nature of a safety-valve, and not rather an agency promotive of the very evil which they were expected to abate? They furnish a different channel for the otherwise unmanageable animal spirits; but they foster their turbulence. The drill develops, but does not tame.

3. We are asked by some educators to try the experiment of co-education as a cure for rowdyism. In some quarters there is a disposition to boast of the success of this scheme, as bearing upon the manners of the coarser sex. We regard it as altogether too much of an experiment to warrant any broad inferences. When it carries with it the abolition of the dormitory system, as it generally does, a new element is introduced into the problem. The presence of ladies in the class-room and the wiping out of all specific college life together *may* lead to the suppression of rowdyism; but a question still remains in regard to each of these propositions. (1.) Granting the refining influences of the ladies upon the young men, taking the sum of the manners of both sexes after a four-years' course, will there be any *absolute* gain? And (2), granting the greater likelihood of good order on the part of young men scattered through boarding-houses and private homes, is the loss of the peculiar college life quite made up to the student?

4. Our great dependence for a cure of these evils is an advance of sentiment among the students themselves. The practices must be branded as disreputable by the general and controlling opinion of the college community. The only other alternative is to break up the college community; to tear down or otherwise appropriate your dormitories; to let your students lose themselves in the general life of the community. Even this alternative cannot be depended upon as a complete relief for the evils complained of. Late and notorious instances of personal assault occurred in the rooms of students living beyond the college precincts. Private boarding-houses where Freshmen have taken rooms are by no means exempt from violent assault and severe injury on the part of riotous upper-class men.

How can the college sentiment be cultivated so as to be itself sufficient to deal with the evil? An analysis of student nature would, I think, show that there is ample ground there for the growth of every desirable quality. The very outrages which have lately occurred may be relied upon to produce a reaction in the minds of not a few students; and there is always a considerable element in the college community who may be relied upon to oppose, if there be any hope of success, the whole line of customs which are collectively termed rowdyism.

Students read the papers, and they cannot fail to be influenced by the judgment of the press. They must mark the unanimity with which the entire respectable newspaper world condemn their rude performances. They must feel that the whole force of public sentiment is against them. There is not an editor worth naming in the whole fraternity who does not sharpen his pen when news of college disturbances reaches his ear,

and hasten to denounce them, without reserve or qualification, as he would a fireman's riot, or any unjustifiable outbreak. And the newspaper popularity of a college depends not upon the success with which the students carry on their pranks; but upon the generalship of the officers of the college in promptly and vigorously suppressing them.

All this outside pressure upon the college community is helpful. At the same time it helps all the more to isolate the student and to confirm him in the notion that, of course, as a student, he must be expected to be governed by rules of conduct different from those of the outside world. Perhaps he thinks he, too, when he is once outside, will write just such articles; perhaps the very men who are writing them now were, in their college days, not specially distinguished for observing the rules which now they would have so rigidly enforced.

Hence the need of a sentiment indigenous to the college itself—happily existing, I believe, in some colleges—and obviating the necessity of serious interference on the part of the authorities. Wherever there is a large moral, studious, and orderly element among the students—and that is the case in almost every American college—there is surely a nucleus, a germ from which such a sentiment might develop. I do not wish to judge harshly the Christian (the truly Christian) and the sincerely moral and orderly portion of our American students; but I cannot quite persuade myself that either the earnestness or the wisdom of their efforts in behalf of a fair degree of order in college is such as to inspire their friends with enthusiasm. Genuine and extensive revivals in college and days of prayer for educational institutions do not bear upon these evils as we have a right to expect they should. It has been sorrowfully and publicly recognized by a distinguished graduate of Princeton, that the recent violent outbreak in that institution followed close upon the day of prayer for colleges. Unbelievers in and out of college are justified in making a point against the religion that fails to influence decisively the character of its professors in a crisis where good order, respect for law, and humanity itself, in some degree, are at stake. If a reformation of college manners should take its rise from some other source, while the reputedly moral and religious men were helplessly looking on or timidly conforming to the evil practices themselves, it would be a just rebuke to their inaction.

The Young Men's Christian Association of the United States and Canada has established a *College Section*, with a special secretary, for establishing and cultivating branch associations in every college. Their success has been encouraging thus far, and they are thus creating a new bond of Christian sympathy among Christian young men in these institutions. It is not impossible that they have a mission in the way of developing and strengthening a general sentiment which shall help to sustain the orderly students in the particular college.

The college classes now passing into the Sophomore year, have the matter very much in their own hands. Some means should be adopted to rally the orderly elements in these classes; to put them in communication with each other; to secure some explicit understanding, and to pass the word from college to college that they will in every way discountenance the evils which are peculiar to the opening of the college year, and will decline to stand in the way of the detection and punishment of the guilty. Joint and simultaneous efforts should be made by the faculties, trustees, and alumni of the different colleges, and a united and strong influence should be brought to bear to secure an altogether differ-

ent reception from that which has become traditional to the new-comers of the next class. Let the golden rule be applied to the beginnings of the college life. Let the classes be incited to turn their ambition in a different direction, and aim to be the creators of a new and a better epoch in the history of the American college. The classes which achieve this result may be sure of such applause from all the organs of public opinion in the land, and all the friends of true manhood and culture and Christianity and education, as will outweigh a thousand times over the coarse fun, and the rude and barbarous revenges in which they now rejoice and boast. Far better the boast of the last class in Princeton, which was uttered amid the exercises of class-day and in the presence of the distinguished president of the college—namely, that this was the first of the 130 classes graduated in that institution which had passed resolutions sustaining the faculty in the discipline of offenders.

GEOGRAPHY OUTSIDE THE TEXT-BOOKS.

By Principal S. T. FROST, A. M., of South Berkshire Institute, New Marlboro, Mass.—lately of Amenia Seminary.

"Where does Mackenzie's river rise? what direction does it run? where does it empty?"

The above triple-headed conundrum is taken from the catechism of the geography we studied. Its "facts were true," as Junius would say; but dry as the bones in the valley of vision! Was it the fault of text-book or teacher (or both) that, after years of lessons, we knew so much of geography and so little of the earth? That we had to study geography outside the text-books, before we could translate intelligently the column of ship news in the New York Herald, or follow a tourist where everybody travels, or recognize the great lines and centers of commerce, or realize that scenes in Ivanhoe, the Legend of Montrose, Childe Harold, the Rise of the Dutch Republic—but why attempt what would be a catalogue of our best literature?—stood for places as actual as Mackenzie's river aforesaid, which never floats a ship, but wastes its wealth of waters on a desert sea. Why not have been told, at least, how Sir Alexander Mackenzie reached the mouth of this river in 1789, and saw the white dolphins gambol about in the Arctic deeps?

Geography is the most natural introduction to literature, and the association is for the bettering of both. It is the best place of all to set baits for a boy who needs to be caught by a love of reading. In this purpose realized, there is more good and more geography than the average boy ever gets from the text-book itself.

Geography outside the text-books stands for the liveliest literature in print. It is wonderful how the fashion of the time contributes to this old-fashioned study. Not, perhaps, for its sake, but none the less for its benefit, was the life-offering of Livingstone; the reckless daring of Stanley, solving the last problem of the dark continent; the dash of "MacGahan's Campaigning on the Oxus," and Captain Burnaby's "Ride to Khiva;" the keen insight of Eugene Schuyler's "Travels in Turkistan," beating, with Yankee tact, both Asiatic and Cossack; the utter assimilation to the life about him of Wallace, in the "Malay Archipelago;" the Anabasis of Sir Samuel Baker's "Up the Nile;" the Swinburne style of Winwood Read's "Savage Africa;" the scientific wanderings of Burton and Speke; the spanning from shore to shore of the great unknown continent by Cameron; "Round the Earth in Eighty Days," by Jules Verne; the Arctic Life of Kane and Hall; and that wonderful sledge journey of 1,200 miles across the ice desert, by Hayes, which will one day pass into mythology, because too wonderful for fact; and past our very doors, as if by private water-paths, the "Voyage of the Paper Canoe." Heroism, enterprise, philanthropy, curiosity, money-getting, chivalry—all the qualities which the world admires or admits have been enlisted in the service.

It is surprising how little poetry or history is used by the text-book or teacher to embellish geographical facts. The best bit of geography, descriptive, physical, and ethnological, that we can now recall, is the opening chapter of Motley's "Rise of the Dutch Republic." The first two sentences should be found in every geography, opposite the map of

Europe. Every boy who loves a horse and a gun, every student who delights to hear or to share an adventure, will have his blood tingle at Pringle's poem : "Afar in the Desert I Love to Ride."

Byron's "Childe Harold" is an illuminated diary of travel. I would bring into the class, when Spain is the lesson, the illustration of the "Maid of Saragossa," and interpret by Napier's Peninsular War that verse, "Foiled by a woman's hand before a battered wall."

In Switzerland I would give, "Above me are the Alps," at Mt. Blanc, Coleridge's translation of the famous German Hymn. I would quote "Childe Harold" at Venice, Metella's Tomb, Lake Geneva, and the Rhine. What like "Mazeppa" could represent the vastness and solitude of a Russian steppe?

Who would hear a lesson on India and not tell of the fiery march of Havelock, and Whittier's "Pipes of Lucknow?" The dullest themes may thus be made inspiring. The bald facts of geography on Burmah or Siam have scarcely a tie of human interest to the pupil; but associate with them the Life, Letters, and Captivity of Dr. Judson; tell how Sir Colin Campbell fought his way to the rescue, like another Havelock; and, for a picture of the climate in its season of sadness, give Mrs. Judson's poem:—

"The wild southwest monsoon has risen
On broad gray wings of gloom."

Some of the unconscious geographers hit the happiest methods and devices of instruction. For instance, Wallace, in his "Malay Archipelago," gives us the size of Borneo in a way that can never be forgotten. He makes a small map of the island, and then directly in its face sets the outlines of England and Wales. It is in the "Malay Archipelago" especially, that this author seems to us a most perfect companion in a book. He is more natural than Americans can be, having no contempt for criticism, and yet no care for it; thoroughly scientific, but beating, in interest and adventure, the dime novels on their chosen ground—the heart of a boy in his teens. He is on good terms with all things; the climate, Malays, Dyacks, orang outangs, and anacondas, alike, and all reciprocate. It reminds us of the parting moral of the ancient mariner:

"He prayeth best who loveth best
All things both great and small,
For the dear God who loveth us,
He made and loveth all."

Forty-six years ago, Darwin, then a young man, fresh from his graduation, entered as surgeon on board of the British ship Beagle, sent out on a voyage of discovery. This became the occasion of his first authorship—a delightful book, called "The Voyage of a Naturalist." It shows all his unrivaled powers of observation; of seeing things which others overlook; all that charming fairness which makes him friends, if not always converts; and it was too early for the theories which have since disturbed his pleasant relations with orthodoxy. Read his account of the Galapagos islands, then inhabited; his description of the Chili coast; his study of Patagonian races; his admiration for the ingenuity of the South Sea Islanders in utilizing nature; how these last, when attending him on a journey to the mountains, and encamping by a pool under a banana tree, made at once a house of its boughs and leaves, struck fire with two of its dried limbs, cooked a supper of its fruit, and, finally,

weaving a net from the filaments of its bark, plunged under the water, and, with open eyes, penning and catching the fish in the angles of the rock, reversed the author's own maxim of "selection and survival of the fittest."

Of those journeyings which follow in the track of civilization, "Seward's Travels Round the World" affords some excellent geography. It is in the form of a diary, and is thus a measure of distance and time. It first crosses the continent by rail. When we remember that from New York to San Francisco we scarcely vary 100 miles on either side of a parallel, and that on this string or naturally about it, are strung twenty-one of our forty-eight States and Territories, we know that the mind's eye can sweep no other range across our continent so comprehensive—none so natural, for thought follows the course of motion.

Rivers and mountains may run north and south, but currents of thought, like the conquests and civilization of history, flow east and west.

What a lesson in geography in this single sentence—"Cheyenne, Aug. 17th—onward and upward a night and a day in a distance of 500 miles, we have gained 5,000 feet on the slope of the Rocky Mountains." Time, distance, mountain slopes and heights, intersecting valleys with their rivers, are all comprehended in the grade of this road, which stretches over one-third the land girth of the globe, like a surveyor's chain. The diary takes us round the world by what is fast becoming a familiar thoroughfare—across the Pacific to Yokohama; down the coast to Singapore; from Singapore to Calcutta—Bombay; then to the Suez canal, the Mediterranean, France, England, the Atlantic and home. This track lies in a zone which is substantially the limit of human activity. Within this space are all the great lines of travel and commerce, all the paths of conquest and civilization, every metropolis, every exponent of human power from the Roman legion to a railroad.

Choice aid comes from our magazines, because of their sensible habit of publishing and illustrating travels and explorations. These have been for days our hand-book—almost our text-book—in geography. Why did not some of our publishers take hints from themselves, and, at least, dividing space with pictures, bring into their geographies, either by quotation or reference, some of the splendid geographical literature of their books and magazines?

Sometimes an incident economizes space by its direct suggestion of important principles, and its help to memory in holding facts. In our civil war a gunboat was sent to the Chinese waters to catch the Alabama. There came a telegram under the sea that the Alabama was working up the Indian ocean, and for seventy days the gunboat stood off and on across the straits of Sunda, where the privateer must pass. One day only they left the watch, because of a rumor that a strange craft was risking a side channel. That very day the Alabama, all unconscious, steamed through the straits, and was soon busy constructing fire ships, and collecting chronometers out of our commerce about Yokohama and Shanghai. What choice geography lies in the story! It shows that a broad ocean may have a very narrow pass, and that this is the only real gateway for hundreds and hundreds of miles out from the Asian coast. It also gives an idea of actuality and use to the boy, who otherwise will not care whether it were the straits of Sunda or any other day of the week. Then you can follow up your advantage, and show him that in most places of the Pacific the bottom of the ocean is

very near the top of the water; that it is only when you get outside of all these continental islands that the real ocean bed drops down, like a terrace, to a vast sunken plain, two miles below the surface. Then add as much of Dana and Darwin, of Wallace and Winchell, of coral islands and swaying continents, and distribution of animal life as he can carry.

Shall we not fear the crowding of facts into our text-books, the "giving more to that which hath too much?" We answer: It is expected that more shall be indicated by reference and search question than shall be actually introduced by long extracts. More extended selections may be brought into class, for in geography we need not be over-fearful of reading and of general literature. Let the teacher always establish a connection between the subject of the lesson and any geography outside the text-books which exactly fits it, any information which he himself possesses, and especially any which the pupil may have gained, or may be induced to acquire. But much of this matter might be actually given in the text-books, in the form of judicious foot-notes, separate from and yet connected in sentiment with the main text, thus leaving the latter even less bulky. And, after all, two facts are more easily remembered than one, if they are properly related. When one will not stand alone two will lean, through suggestion, the one upon the other.

Rather let us grudge the space sometimes given in geographies to associated sciences, and particularly to extended generalizations of physical geography. The advanced theories of Humboldt, Ritter, and Guyot, have laid the lovers and students of the science under a lasting obligation. For us teachers, especially, they are a salvation from that belittling of elementary samenesses—the worst phase of our profession—which we all should so much and so justly dread, a relief from that fatal facility of study which bedrugs the pedagogue into the drowsiness of a lotus-eater. Let the teacher be a student of this more advanced science, and then digest, assimilate, and adapt it for the school-room. But heavy philosophizing in the body of a common-school book is fatally misplaced. Better give lively facts at first. Every author who has been a teacher should know that a boy delights to study birds, while ornithology is a bore.

It is hard to see why geographers should fail to embellish with the genius and beauty of a whole realm of literature a study hitherto confessedly dry. The abundance at hand is absolutely perplexing. "The kingdom of my father," said Cyrus to the Ten Thousand, "extends from the south, where men cannot dwell on account of the heat, to the north, where men cannot dwell on account of the cold. So that I do not fear this, that I may not have what I may give to my friends, but that my friends may not be enough on whom to bestow them."

THE STUDY OF ENGLISH LITERATURE IN SECONDARY SCHOOLS.

By Principal ALBERT B. WATKINS, A. M., Ph. D., of Hungerford Collegiate Institute.

There is need of no apology for making a plea before the representatives of the academies of this State for the study of the English language and its literature. The fact that the great majority of our leading men, not only in business vocations, but also in the so-called learned professions, have never advanced in their education higher than the secondary school; and, further, that the secondary school will, in all probability, continue to educate the majority of the leading and ruling minds of the country, is the chief reason for calling your attention in this paper to the importance of giving students in these schools a better idea of their vernacular, and at least a glimpse over the broad fields of its literature. A few years have seen a marvelous advance in the attention paid to this branch. Ten or fifteen years since the systematic study of our own literature was hardly begun even in our best schools. Now a course of study is thought incomplete without it. Amid all the changes which are taking place in our courses of study, we hail this advance as one of the greatest practical importance in a certain direction, and heartily echo the sentiment of an earnest New England educator, when he says: "The best thing in our new high-school work is the revival of interest in English literature." We wish to call your attention briefly: 1st, to some of the results to be attained in teaching English literature in our secondary schools; and 2d, to the method of teaching this branch in order to attain these results. In the first place this study is an important and efficient means of developing the power of expressing ideas in a beautiful as well as in a forcible manner. It not only places before us constantly models for critical and patient study, but it also incites to zealous and enthusiastic labor for acquiring a knowledge of the masters of style and of their works.

In the second place this study tends to the formation of mind. An eminent American writer has said that "Superior minds are formed, not merely by solitary thought, but almost as much by communication." Genius is powerless to benefit mankind unless its power of expression is an avenue through which it may pour its wealth of thought upon the people. Says the same writer: "It is doubtful whether a man ever brings his faculties to bear with their whole force upon a subject until he writes upon it for the instruction or gratification of others. To place it clearly before others, he feels the necessity of viewing it more vividly himself." This truth we, as teachers, can fully substantiate from our daily work and experience. So the study of literature in the fact of communication, like mercy, as described by Portia, "is twice blessed; it blesses him that gives and him that takes."

Again, this study is important in its relations to the study of history. While we can study any literary work exhaustively and philosophically only in the light of a knowledge of the times in which the writer lived, on the other hand, in the study of history we are greatly benefited by a familiar acquaintance with the literary work of the age which we are studying, and with the lives of their authors. Ample and vivid illustrations of this fact could readily be adduced did time permit. In the fourth place, this study furnishes intellectual discipline of the highest

kind. The memory is strengthened, the imagination is cultivated and refined by a familiarity with the best imaginative works of this or any other age or nation; and the reason is strengthened and developed in its powers by the critical study and analysis of the masterpieces of British and American argumentation. *Again*, this study is an effective means of social and of moral culture. In so far as we can cultivate and strengthen in our pupils a taste for good reading, a love for good books; in so far as we can lead them to the fountains of pure style and thought and feeling, to that extent shall we wield a powerful, an all-controlling influence toward molding their social and moral character. The recent extended and earnest agitation of the question, "What are our boys and girls reading?" shows that the public are waking up to the importance of the subject, and that there is a strong and dutiful demand for our coöperative labor in this field. If we can succeed by our teaching in turning the tide of youthful thought and taste from the artificial and impure and degrading current in which they now so largely run, into the purifying and instructive and ennobling channels of our standard American and English writers, the generation to come will certainly rise up and acknowledge their indebtedness to the teachers of this day. If we can develop in our pupils a strong and eager taste for that which is pure and good in our literature, and thus can cultivate and inform that taste, leading it to the sources where it may find abundant and suitable nourishment for its continued and continual support, not aiming, unless favored with an abundance of time, to develop to any marked extent the critical faculty of the pupils, nor endeavoring to impart a technical or minute knowledge of the earlier phases of our language and literature, but giving them an enticing glimpse of the riches which are within their grasp, which the reading and study of a life-time cannot exhaust, through us, as humble instruments, the study of English literature will accomplish a work in the interest of culture and morality, to place it on no higher basis, whose influence cannot be measured by time. These and other points of benefit we might dwell upon at greater length, and enforce by illustration and quotation, but we pass to consider next the method of teaching this branch in such a manner as best to attain the desired results.

For various reasons we enter upon this part of the subject with great hesitation. We fear that we cannot satisfy those who really, although not professedly, elevate *method* at the expense of matter or results. We think, too, that no fixed method of teaching this or any other branch can be laid down which can be followed at all times and in all places, regardless of the peculiarities of teachers as well as of students, and without reference to difference of ability and of opportunity in the taught. We remember, too, that while in one school two years may be devoted to this study, and in another one year can be employed, in a third, perhaps, but a single term can be used. The field, too, is practically limitless, and the faithful teacher is sorely puzzled to know into what part of this boundless territory he shall lead his class, what part he can attempt with them, what part leave for their future and independent exploration and enjoyment.

Considering these difficulties which beset us at the outset in endeavoring to outline a method for conducting a class, we determine to place before you our own experience with a class during the past academic year, which was divided into three terms of about thirteen weeks each. We are conscious that the plan is an imperfect one, and that no

person can follow it implicitly, but we hope that it may furnish some slight assistance by way of hint or suggestion to teachers of little experience in teaching this branch. The first term was devoted to gaining a thorough knowledge of Brooke's Primer of English Literature, a little manual of about 190 pages. Undoubtedly the same results could be reached by the use of Gilman's or Backus', or Shaw's text-book upon this subject. During this term the class reviewed, quite thoroughly, their knowledge of rhetorical figures, and of different kinds of style, and were required to learn the different prefixes and suffixes in ordinary use, with their signification. They also worked for several days upon the analysis of words, and wrote dictations of the principal facts in the history of the English language, as well as a brief and condensed synopsis of English history, while their attention was repeatedly called to the connection between history and literature in some notable instances. A written examination at the close of the term, after a thorough review, tested the knowledge and progress of the class. The second term the class first studied and completed Dr. Alden's very excellent little volume, "Studies in Bryant," which was to serve somewhat as a guide for them in their coming study of other poets. About three weeks were then occupied in studying poems selected from Longfellow, among which were "The Norman Baron," "Sir Humphrey Gilbert," "Wreck of the Hesperus," "The Rainy Day," "The Village Blacksmith," and a part of Evangeline; and at the same time a good idea of English prosody was given to the class, and the different metres in Bryant and Longfellow, as thus far read, were studied carefully. Two or three weeks' study of selections from Whittier followed. As in the former authors, metres, rhetorical figures, historical, geographical and classical allusions, synonyms, and the signification and history of certain words were thoroughly examined and studied, and in connection with them, the peculiar merits and distinguishing characteristics of the three poets already studied were pointed out. Each member of the class was required to prepare and present before the class an essay upon one or other of these poets and their works. While the class were studying these poets, a dictation was given them embracing a synopsis of the chief American writers and their principal works, and advice was offered in regard to reading these authors. An examination upon the labor done upon the works of Bryant, Longfellow and Whittier, and upon whatever dictations had been given was then made, and the class proceeded to the study of Milton, which, with careful reading and study of two plays of Shakespeare, occupied the remainder of the academic year. In Milton, *L'Allegro*, *Il Penseroso*, *Lycidas*, *Hymn on the Nativity*, *Comus*, and two books of the *Paradise Lost* were studied. In studying these the class were told where they could find the Life of Milton, standard criticisms upon his works, and the history of his times, and were required to inform themselves upon these topics.

The study of Shakespeare included *Merchant of Venice* and *Macbeth*, Rolfe's, or the Clarendon Press edition being used. The plays were read scene by scene, the metres examined, the differences between the present and the Elizabethan English noted, both in signification of words and in grammatical form and usages, rhetorical figures and their use examined, sources of the play learned, history of the English drama reviewed in Brooke's primer, and in the study of *Macbeth* the class were required to draw a map of Scotland, and upon it to locate all the places mentioned in the play. The life and times of Shakespeare were also studied, and

some knowledge of cotemporary authors required. After each play had been thus studied, characters were assigned to members of the class, and the play was read through connectedly. In all the authors studied, passages of unusual beauty or merit have been pointed out, and the class asked to commit them to memory. I have usually required classes to study three or four essays of Bacon, comparing his style and use of language with Shakespeare's, examining the proportion of Saxon words he employs to those from other sources, and requiring an analysis of each essay, but time was insufficient this year, and this was omitted. To some classes I have given less of Milton, and have permitted them to read selections from Goldsmith, or from Addison and Irving, or from Burke and Chatham and Webster. My experience has taught me that it is far better to spend a portion of the time with the works themselves of the authors, rather than occupy the whole time in learning *about* the authors and their works; and also that it is decidedly preferable to read one or two authors quite extensively, so that the class may get a good idea of all or nearly all the works of those authors, than to get a slight sip of many, and a satisfactory draught of none. It is very gratifying to the faithful and enthusiastic teacher to see, as the class advances, how a class, partial at first to the easier poets, will, after a little, find great pleasure in the study of Milton and Shakespeare, and finally become very enthusiastic when the beauty and depth of the author have been discovered by patient labor. We would by no means say a word in opposition to the study of the ancient classics. They have their indispensable part to perform in the culture and development of the mental faculties, and they lie at the basis of all thorough and exhaustive study of our language; but it is our opinion that if our colleges, as well as our secondary schools, would make a place in our curriculum for the more extended and systematic study of our own language and literature, the student would be decidedly the gainer, for it has this advantage over many of the studies of school and college life, that, in the words of President Porter, "when once they have become a familiar field of intelligent study, it is a field which the student will never be able, and never will desire to desert."

THE BETTER ORGANIZATION OF SCIENCE-EDUCATION.

By Professor S. EDWARD WARREN, C. E., of Newton, Mass.; formerly of the Rensselaer Polytechnic Institute.

The object of this paper is to give the outlines of a *comprehensive* solution of the problem of the better distribution of scientific studies.

Bidden by limits of time to allow but a minimum of preliminary statement, I proceed at once to say, that among the foremost thoughts in connection with the subject, is this: "There must be division of labor in education, as in other departments of action."

A tabular statement will reveal, in a general way, the possibility of this desired division, by showing some of the main divisions of education. Accordingly, we may consider education as to its—

Ends.	General, or disciplinary, and Technical, or professional.												
Scope.	Humanistic, devoted to the study of man and his works, and Naturalistic, devoted to the study of external nature as subservient to man.												
Grade.	Elementary, in <table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding-right: 10px;">Primary,</td> <td style="padding-right: 10px;">Intermediate,</td> <td style="border-left: 1px solid black; padding-left: 10px;">Schools.</td> </tr> <tr> <td colspan="2"></td> <td style="border-left: 1px solid black; padding-left: 10px;">Grammar,</td> </tr> </table> Secondary, in high schools, academies, and preparatory schools. Superior, in <table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding-right: 10px;">Collegiate,</td> <td style="padding-right: 10px;">University,</td> <td style="border-left: 1px solid black; padding-left: 10px;">Institutions.</td> </tr> <tr> <td colspan="2"></td> <td style="border-left: 1px solid black; padding-left: 10px;">Professional,</td> </tr> </table>	Primary,	Intermediate,	Schools.			Grammar,	Collegiate,	University,	Institutions.			Professional,
Primary,	Intermediate,	Schools.											
		Grammar,											
Collegiate,	University,	Institutions.											
		Professional,											
Nature.	A mechanism, ending in a manufactured product. A process, producing a beautiful and fruitful cultivated growth.												

My foremost remark on this table, as a whole, and before entering upon its details is, that though logic is in life, yet logic is not life, as was both elegantly and conclusively demonstrated, once for all, in what I will now call the theorem of the "one-horse shay."

That is, things logically, or thinkably separate are *vitally* united, intimately and inseparably interwoven in *real* life.

For instance, plants do not stand in the field as they do on the pages of a botany, though there is in them, in all their sweet comeliness of natural disarrangement in the fields and forests, the whole *foundation* for their equally natural systematic classification by and in the mind of man.

I. Turning to the *first division* of our table, after all that has been earnestly and with high tone, but possibly with somewhat of subtle haughtiness also, written and spoken about "man as an end to himself," and about culture for its own sake, independent of gainful results to self or the world, it yet remains true, that properly "no man liveth unto himself," and, in plain fact, that any study, though primarily pursued for practical ends, may, nevertheless, be pursued *in* the love of it, if not simply and only *for* the love of it.

It also remains that any study, thus pursued, may also be engaged in intelligently and thoroughly with regard to principles as well as rules, and that, whatever it be, study *cannot then* fail to be a means of mental discipline, as well as a door to material prosperity.

The distinction, then, between "disciplinary" and "practical," though doubtless partly in the nature of the studies, is more in the ends for which they are pursued, and these ends, as we have seen, can be, as they ought to be, conjoined in the pursuit of any subject.

That some studies, however, *are* in their very nature more obviously disciplinary than practical, is sufficiently seen, in passing, by analogy between body and mind. For as cheese, meat-biscuit, and the Arab balls of coffee and butter are, each in its own way, articles of highly condensed nutriment, as compared with oranges, cherries, or water-melons, so subjects, like pure mathematics, or language philosophically studied, strongly tax the thinking powers, are condensed mental nutriment, as compared with the *elements*, especially, of the sciences of observation.

But I go further, and earnestly contend that gainful industry, and study for the sake of successful prosecution of such industry, with concurrent enjoyment of the study itself, stands in no need of apology; for what is gainful industry but another name for the control of means, and what better prerogative of being is there than control of means, for do we not call the *perfect* control of *all* means omnipotence—an attribute of Divinity itself? Whether, then, one controls large means in great philanthropies, such as depopulating cities as places of residence in distinction from places of business, or small means only, in affording an example of rational living, and neighborly helpfulness, such control is honorable; and it is thence honorable to cultivate the mind as a means of gaining more of such control by a more *intelligent* industry.

All these favorite and long-cherished thoughts find such emphatic confirmation in the writings of Herbert Spencer, that I must indulge myself in a short quotation from his little volume of four essays on Education,* a quotation which may lend support, in your eyes, to my remarks. He says: "Thus far our question has been the worth of knowledge of this or that kind for purposes of *guidance*. We have now to judge the relative values of different kinds of knowledge for purposes of *discipline*. This division of our subject we are obliged to treat with comparative brevity; and, happily, no very lengthened treatment of it is needed. Having found what is best for the one end, we have, by implication, found what is best for the other. We may be quite sure that the acquirement of those classes of facts which are most useful for regulating conduct, involves a mental exercise best fitted for strengthening the faculties. It would be utterly contrary to the beautiful economy of nature (and its unity, too, I will add), if one kind of culture were needed for the gaining of information, and another kind (otherwise useless, too, I ask you to note), were needed as a mental gymnastic."

"Everywhere throughout creation we find faculties developed through the performance of those functions which it is their office to perform; not through the performance of artificial exercises devised to fit them for these functions. The red Indian acquires the swiftness and agility which makes him a successful hunter by the actual pursuit of animals, and, by the miscellaneous natural activities of his life, he gains a better balance of physical powers than gymnastics ever give. And similarly throughout."

In confirmation of the summary assumption of the last little phrase, "and similarly throughout," I will add an incident, with first a word of explanation.

The *substantial* likeness of human nature to itself, in all its individual examples, we all admit. Hence, we may also admit, that the spontaneous testimony of any common man, as to a law of action of the faculties of which he is making daily use in practical affairs, would coincide with the like testimony of any other man similarly engaged.

Premising so much, the incident is this:

Having occasion one day to while away a short interval before meeting a person on business, I sauntered into the garden of a neighboring florist. His ten-year-old boy was about starting on a few simple errands, and asked his father for a memorandum of them. The father, a man of apparently about fifty years, replied: "Why, can't you remember those two or three things? If you don't trust to your memory, it won't be long before you will have no memory to use." Now, there was testimony which just bubbled up out of human nature as water from under a hill; testimony having, therefore, somewhat of the force of a revelation, to the effect that the faculties are trained by use on whatever naturally comes to hand to be done by them.

This first distinction, then, whether in the ends of study or in subjects of study, of disciplinary or practical, may be allowed to stand, though it be more a distinction in thought than in life.

II. The next distinction in the table, that of education, as to its *scope*, into HUMANISTIC and NATURALISTIC, is, I believe, a more real and important, and a far less abstract one than the preceding.

We say, and say truly, that no two men are alike, and say it gladly, adding that "variety is the spice of life." But humanity is not so totally disintegrated as it would be if the former of these sayings included the whole truth. Men, however individually unlike, are also associated in larger or smaller groups, according to their more or less broad resemblances, as is shown by the existence of very persistent parties in every department of life; "high," "low" and "broad" in the church; "administration," "opposition" and "independent," with various narrower parties, in politics; "high life," "low life," and what the good lady called the "middlin' interest," in society. Likewise in education there are parties, and I do not believe that any rest on deeper and stronger foundations than those based on the distinction of *humanistic* and *naturalistic* in education. For this distinction corresponds to the fundamental philosophical distinction of subjective and objective, and to that of materialistic or practical, and spiritual or speculative, in the general cast and tendencies of one's being.

There are three ways of establishing a proposition concerning practical affairs; by pure reasoning or logical demonstration; by the authority of great names, names of those who are so looked up to as properly trusted leaders, that their judgments are implicitly accepted as safe and sufficient ground of action; and third, by an appeal to experience.

I have, perhaps sufficiently for the present occasion, indicated by a hint at an argument, the propriety of recognizing two distinct, parallel lines of education, each distinguished by the prominence of what is subordinate but not wanting in the other.

I wish, for the benefit of those who might be reassured by it, to give here a few items of *testimony* in the same direction from opinion and experience.

1. In the able report made in 1855, on the reorganization of the Rensselaer Polytechnic Institute, by its Director, it is remarked, page fifteen, that the two classes of "superior" institutions, universities and polytechnic institutes, might be respectively called *humanistic* and *industrial* universities.

On page twenty-three, it is stated that "the system of scientific and technical education of the kingdom of Saxony has a similar elevated rank to that which has long been accorded to its *humanistic* or literary counterpart."

2. A more recent and equally competent American witness* testifies thus: "I shall assume that there is a certain natural order in the development of the human faculties, . . . that . . . we may roughly divide the faculties of the mind for purposes of education into observing and reflective; . . . that *individual minds come into the world with individual characteristics*; often, in the case of superior minds, strongly marked, and qualifying them for the more successful pursuit of some one career than of any other; . . . finally, . . . without stopping to qualify the statement, that the study of the phenomena of the material world may be said to be the divinely appointed instrument for the cultivation and development of the observing faculties; while the study of the immaterial mind, with all that belongs to it, including the study of language as the instrument of thought, is the chief agent in the development of the reflective faculties."

The omitted qualification I will here replace in a way to suit my own present purposes. The main point is, the clear recognition of the two lines of study of man and of nature, or humanistic and naturalistic. The bearing and connection which I would give to this recognition are different from those of the quotation. I would connect it with the assumption, happily made, as being so agreeable to undoubted facts, of marked individual characteristics, rather than with the subdivision of the mental faculties into observant and reflective. For, having used the observing faculties in ascertaining the facts of nature, there is surely ample room and occasion for the exercise of the reflective faculties in inquiring how these facts came to be as they are—that is, in constructing probable or certain physical and mathematical theories of natural phenomena; also in discovering practicable applications of the gathered facts.

On the other hand, the primary facts of mind are ascertained by the interrogation of consciousness; an operation quite analogous to observation.

These considerations place the two lines of education, humanistic and naturalistic, into their here-asserted relation of *parallelism*, rather than succession. Thus they are made to manifestly meet the wants of two great corresponding preponderant intellectual tastes, each being shown to minister, in its own way, to the whole being.

3. Again, Dr. Jacob Bigelow, in an address on the "Limits of Education," † after speaking of those sciences which "serve to develop truths and laws appertaining to the material earth," adds, "but there is another extensive class of scientific pursuits, the subjects of which are drawn from his own nature . . . metaphysics, . . . ethical and political science, . . . history, . . . fiction, . . . also philology, etc. Here again, though not by any distinctive names, our two lines of study are clearly

* Classical and Scientific Studies, etc. W. P. Atkinson, Cambridge, 1865.
† Boston, 1865.

recognized; as they are still again in a paper * by the late Prof. Woodman, of Dartmouth College.

But this that I am advocating, both by reason and authority, is not a distinctively American idea. Able foreign thinkers agree with those already quoted.

4. Scott Russell, practically recommended to us by his building of the Great Eastern, and by a princely work on ship building, and recommended also as a thinker, by his noble-spirited work on "Technical Education," † speaks as follows:

"Knowledge for technical men may be divided into two sorts:

"a. Knowledge of matter nature. b. Knowledge of human nature."

By technical men, he means all who in any way apply knowledge to the purposes of life. Hence, as they are to labor with and for their fellows, and for mutual improvement of being as well as for profit, he claims that both of these knowledges should be suitably commingled in the education of technical men. This is here incidental, but important as forestalling sneers about "bread-and-butter study." But meantime let us hold on to the main point, that, in a vast education scheme, developed with great fullness of detail, our author recognizes as his most fundamental subdivision of all knowledge, the same that I have called humanistic and naturalistic.

5. J. Stuart Mill, in his inaugural address in 1867, as rector of the University of St. Andrews, says: "Let me first say a few words on the great controversy of the present day with regard to the higher education; . . . the vexed question whether general education should be *literary* or *scientific*. He thus recognizes both forms, and does so approvingly, in claiming that each should proportionately enter into all complete education.

But there is also the argument from *experience*. This, alone, might be developed into a paper, by giving the number, location, growth and practical working of technical schools. It must, however, be enough here simply to say, that, beginning with the celebrated polytechnic school of Paris, Europe, throughout its length and breadth, from Lisbon to Moscow, is filled with them; while in the United States, beginning with the well-known Rensselaer Polytechnic at Troy, N. Y. (which stood alone of its kind for twenty years or more, celebrated its semi-centennial three years ago, and otherwise heads the list in some respects), we have now, according to the U. S. Commissioner's latest report, seventy-four scientific schools of various kinds and degrees of development, many of them the national land grant schools, commonly known as agricultural and mechanical colleges.

III. Coming now to subdivisions of education relative to *grade*, one of many good works of our National Bureau of Education is to familiarize the whole people with the well-defined grades entitled elementary, secondary, superior, and professional.

1. Of these, just to refresh recollection, elementary, embraces primary, intermediate and grammar, and all private or ungraded schools of equivalent character; in a word, all below high schools and academies. The natural ground of this division is in the essential characteristic of their pupils, as being *children*, in the distinctive sense of pupils who go to school mainly because they are sent, thinking little or nothing why or wherefore, and with slight manifestation, if any, of personal preference for one study over another.

* A Liberal Education or Not.

† Systematic Technical Education for the English People. London, 1869.

2. Secondary education, that of academies and high and preparatory schools, embraces *youth*, distinctively so called—those who attend school with more or less of distinct purpose of their own, and with a corresponding strength of preference for one line of study rather than another.

3. Superior education is that of colleges and universities, where those who have time, taste and means, can cultivate their minds, primarily, or largely, for the pleasure of so doing, either within the limits of a four-years' wholly or partly prescribed course, as in colleges, or within limits bounded only by those of human knowledge, as in universities properly so called.

So far as it is desirable for the sake of keeping abstract ideas and sentiments of aspiration alive and operative, it may be well that the idea of education, for its own sake, finds in these institutions its traditional home. Yet, on the one hand, this idea can be domesticated in the scientific or naturalistic, as well as in the literary or humanistic line of education; and on the other hand, none necessarily attend colleges and universities without practical ends in view, and probably none do so, who aim faithfully to serve their generation here on earth, and who, with just self-regard, remember with this aim that "the laborer is worthy of his hire."

4. *Professional education* is that which explicitly declares its aim to be to fit its subjects for some specific, practical calling. Yet, according to principles already stated, professional students are not necessarily such with sordid aims, and may aim after, and in that case, acquire elegant culture, simultaneously with fitness for a calling, and from the same studies. The effect results from the nature and aims of the student, not from anything inherent in the course of study pursued. The largest sphere is touched as a whole by touching any of its points, and the delicate mind is conscious of contact with the great unity of the universe in touching reflectively on any one subject of thought.

Now, I am ready therefore for the *application*, which from the beginning I have had in mind. It is this:

The two parallel lines of education, which I have already sought to briefly explain and justify, the humanistic and naturalistic, should run through all the successive grades of education above the elementary, namely, through secondary, superior, and professional—as a string runs through the beads which hang upon it.

But here two questions immediately arise:

1. Why through our elementary schools also should not our lines sensibly run?

2. With this early-begun and long-continued separateness of our parallel lines, where is provision made for that unity of sentiment and action which is desirable among educated men?

The answer to the first question is found in the definition already given of elementary schools. Just because specific individual bent does not there generally begin to show itself in any marked degree, the training is alike for all, and does, or should consist of only those rudiments which are presumably useful to all.

The answer to the other question brings out a fundamental principle of grand importance.

It is a principle in classification, that things which are necessarily classed together, have, nevertheless, attributes in common with things belonging to other classes. Thus, a blackberry bush and a prickly pear have the attribute of prickliness in common, yet in such a conspicuously

different way, and with such conspicuously different accompaniments, that no one would think of putting the two in the same class of plants. The common attribute is thus obscure, or else very differently circumstanced. This allows us to announce the principle, seen throughout nature, that things belonging to different classes differ, not by the *exclusion*, but by the *subordination*, in each, of that which *predominates* in the other. Good men are not divine, and bad men devils. Wise men are not infallible, and foolish men utter fools; and so on to the end of all possible illustration.

But good or wise men are so *generally*, and to a *prevailing*, and hence *characteristic* degree. Applying this now to our subject: Humanistic and Naturalistic institutions of learning, with their courses of study, are neither of them *exclusively* such, but *principally* so.

Thus, the study of Nature and her works should enter to a certain extent and in a certain way, neither of which it concerns us now to dwell upon, into schools primarily devoted to language, literature, history, philosophy, and social science.

Also, the studies just mentioned should, likewise, with certain qualifications as to manner and degree, enter into the programmes of schools of either general or technical material science.

In this way, that unity of sentiment and action, which should ever exist, not only among citizens of the same State or nation, but among beings of the same kind, wherever situated on the same habitable globe, is secured and guarded.

The way is thus cleared for me to return to my main topic—the gradation of scientific studies. These studies, as I have said, should, as well as literary ones, run through the three successive grades of schools—preparatory, collegiate, and professional.

Let me give, first, a few *general* illustrations, and then a more *particular* one:

I. 1. Take, first, *chemistry*. In the *secondary* grade of education, we find one grade of text-books or course of instruction, giving the elements; giving, for example, the properties and most common combinations of the simple elements.

2. In the *collegiate* grade, the instruction would probably differ, not so much by going into more minute details and descriptions of rare substances, as in giving more of the general relations of chemistry to other sciences, and to life on the earth. Hence the organic chemistry, properly omitted, as I suppose, in elementary instruction, might be more dwelt upon here.

3. In the *professional* grade, the subject again would be taught more in the laboratory than in the lecture-room, and especially such lines of chemical study would be chosen, and these would be followed to such an extent as should be appropriate to the respective chosen professions of the students.

II. Turning to mathematical science, if *elementary* instruction in it consists in thorough, where thorough includes repeated drill in elementary algebra and geometry, with perhaps elementary plane trigonometry, the *collegiate* grade would embrace the general principles of the higher mathematics, enough to enable interested students to apprehend their character, and feel their peculiar disciplinary power, and to follow them to whatever extent scholarly tastes in that direction might prompt.

More mathematics in purely *professional* schools would then be appropriately limited to such special portions as had special practical bearings.

A good illustration is found in the topic known as the "method of least squares," a leading practical use of which is in ascertaining and eliminating the probable error from the mean of a number of differing observations, such as various reachings of the same angle on an instrument for taking angles.

Passing over other general illustrations, both from natural and from mathematical science, for want of time, I will now dwell with *more detail* on a special illustration, for a two-fold reason.

First, it is a much less generally organized and understood department of study. *Second*, it is one with which, by comparatively long experience, I am most familiar. I mean the theory and practice of mathematical drawing; such drawing taught, I mean, neither by rule alone nor by copying, but in connection with all the principles or theory naturally belonging to it.

The entire field, comprehensively and thoroughly considered, embraces three well-marked stages, precisely adapted to the corresponding generally and practically recognized stages of education, preparatory, collegiate, and professional. That is: 1. Its subjects should first be gone over in an elementary way, in *preparatory schools*, and for two important reasons, each of which is sufficient, though each has its own appropriate bearing.

First. Nothing, it should seem, could be more obvious than that like grades of the different studies should be attended to in schools of the same grade. Yet what are the facts in this subject? While elementary instrumental drawing should be among the primary requirements for admission to all our polytechnic schools, it is not yet made, in any degree, a requirement of admission to even one of them. Conversely, since it is as elementary in grade as are the arithmetics, algebras and geometries taught in academies and high schools, it should be as fully taught in these institutions as are the other subjects of like grade which are taught to candidates for subsequent higher scientific study. Yet it is, thus far, either studied in so few of these schools, or else so insufficiently taught, that, as a matter of fact, it is not yet, as it should be, made one of the requirements for entrance upon such higher study.

But, *second*, independently of its *proper place*, as a preparatory study, it is to be remembered that tens of thousands, in the whole country, end their school days at high schools and academies; and that to thousands of these a limited knowledge of instrumental drawing, made thorough as far as it went, would be exceedingly useful. There are thousands who can now gain this valuable knowledge only by self-instruction, or in evening schools, or as special students at the higher scientific schools. But *self-instruction* has its peculiar hindrances and discouragements. "How can I understand, except some one should guide me?" *Evening schools* are common only in a few large communities, and then the disparity of age and preparation in the pupils are a partial hindrance; also the large number liable to be placed in charge of one teacher renders a resort to the copying system, or to drawing by rules or directions arbitrarily given, without demonstration of principles, quite probable; though the thoroughness which will enable the pupil, unless of unusual insight, to manage new cases with certainty, can never be secured without patient drilling in the principles, as well as in the mere manipulations. Finally, attendance on the *polytechnic schools*, merely as a special student of drawing, is wasteful, both of money and time, since the force of instruction is not generally sufficient to permit it to turn aside from

regular duties to give such and so continuous special instruction as the kind of student now contemplated needs.

On all accounts, therefore, elementary instrumental drawing, including drafting manipulation generally, with the drawing both of objects and their shadows, both in plan and elevation, and in perspective, should be taught altogether within the grade of education called secondary or preparatory.

But how is this to be accomplished, says one—nay, say many—since outcry against multiplicity of studies is so easily and not unreasonably raised?

Not, I am happy to be able to say, by anything so alarming as a bold and novel stroke, but only by a hastening of a movement already fairly begun, namely: the multiplication of preparatory schools as distinctly devoted to preparation for *scientific* study, as Phillips and Adams Academies, for example, are to that for classical study; also a large increase in the number of schools, like Williston Seminary or St. Johnsbury Academy, and many others like them, having separate parallel classical and scientific courses, of which the latter shall be more and more fully developed, and of more and more pronounced distinctness of composition.

But, once more, a legitimate inquiry will be: where are competent teachers to be found? Nowhere that I know of at present, except among graduates of the higher scientific schools; until normal schools, or colleges announcing general scientific courses, take up the subject in its relations to secondary instruction, as it seems they might and should do, at least with appropriate special classes of their students.

2. But I said that instrumental drawing, largely defined, including those branches of geometrical science which properly belong to it, ran through the *collegiate* grade, as that has previously been defined. To understand this, and thus indirectly confirm the remarks just made, it should be understood that while, in teaching the elements, theory and practice may well be combined, these are conveniently made formally separate in the higher portions of the general subject.

Now, by theory, in this connection, is principally meant the almost unheard-of subject of Descriptive Geometry. I thus speak of it, because the study of it in this country is as yet unfortunately confined to the higher scientific schools, all of which, until within a few years, could be counted out on one's fingers, and the oldest of which has seen but a trifle over fifty years. Yet this subject of descriptive geometry, the study of which is thus limited, is not a technical subject at all. Neither are its general or theoretical applications so. Most briefly defined, and rejecting controverted definitions, it is the practical geometry of *form*, as distinguished from that of *size*; and it teaches how to represent all combinations of forms with an exactness which makes the representations an equivalent to the forms themselves, for purposes of study, or of guiding constructive industry. Therefore, the study of it in its general principles, apart from its practical applications, should be placed in the departments of general science, parallel with the classical ones, in those *colleges* which announce such parallel courses. This conclusion obviously follows from the generally recognized and accepted definition of the college as the grade and class of institution in which the *general principles* of various knowledge are to be obtained. Only here, as already explained in case of academies and high schools, the time for these studies is to be made by a resolute separation of the classical and scientific courses, and

an elimination from each, or a vigorous pruning in each of that which is subordinate to its main and distinctive purpose.

3. Finally, the practical applications of Descriptive Geometry, including in the latter term, broadly used, the theory of Perspective, find their appropriate place in the polytechnic school, with only such special topics of the theory as have particular special applications.

These practical applications are the drawing of engineering structures of all kinds—in wood, stone, and iron—some of which, especially certain masonry constructions, are too complicated to be thoroughly worked out without a good previous theoretical knowledge of geometrical forms and operations in space; machine drawing of all kinds; original and scientifically accurate geographical and topographical map drawing, and architectural drawing, in the higher departments of which quite complex problems of intersecting surfaces are liable to occur. Drawing, indeed, is the language of engineering and other industrial design.

With the work of polytechnic schools thus disengaged from what does not naturally belong to it, and made purely professional, its long and expensive courses could be somewhat shortened to three, if not to two years, as in other strictly professional schools, and at the same time be elevated and strengthened. In place of teaching at the lower and middle portions, subjects whose natural place is, on every reasonable view of the case, either in preparatory schools or in colleges, there could, be in their upper one, lectures of purely professional instruction of a high order, by the best experts in engineering and architecture, or at least time for much fuller instruction by the regular professors in the higher portions of their subjects.

Contrasting this, which ought to be, with what is, what do we find? Simply this: The naturalistic line of education is, to a large extent, concentrated in a single grade of institution, the polytechnic school, which thus becomes to its students an epitome of the preparatory school, college and professional school in one.

We find in the report of 1855, on the Rensselaer Polytechnic Institute, before quoted, these words, on page thirty-three: "We may conveniently divide the system of instruction of a polytechnic institution into three parts; first, the *preparatory course*, embracing all those studies necessary to matriculation in the institution; secondly, the *general course*, constituting the foundation in general science and literature, on which, as a common basis, are erected the subsequent courses; and, thirdly, the *technical courses*, which include all the special teachings, more or less peculiar to the objects of the institution." Excellent words, very interesting in the first place, as showing what *ideas* were at work on this subject so long as twenty-three years ago in these United States, when, be it remembered, all the American technical schools of any note could easily be counted on the fingers of one hand, perhaps even if the thumb had been missing.

The *idea* here expressed may stand without criticism. Yet it now, more evidently than at that day of small things, appears in the form of a germ, and may be reviewed as respects the scale of development which it seems to have contemplated. For it expressly includes the three successive great and generally recognized stages of individual progress in receiving an education in one institution. But why, except for the length of time required by the human mind to completely work out a budding idea into a full-blown flower, should these three stages be thus included? The humanistic line of education is not so compressed. The classical

academy, the classical college, and the several humanistic professional schools of law, medicine and divinity and fine art, are not thus included, with all their pupils and teachers, within the same four walls; or, what is the essential point, under one organization in one place.

Here it is very important to observe, that it is in this state of things that we find the *lack of definite point and aim* in the separate "scientific departments of academies, but much more conspicuously in those of colleges." These last seem to have no particular reason to be, except as a sort of improvised or indeterminate response to a general popular demand for something, the public knows not exactly what, bearing the name of scientific education.

The academy "scientific department," the college "scientific course," parallel with its classical one, and the professional scientific school, are at present out of line with each other, destitute of vital relations to each other. That is, students *do not go* in regular order through the three, but, with very rare exceptions, skip the college entirely, and do not get in the academy, as I have shown, *all* that a polytechnic school ought to be *able to require*, and actually require for admission to it.

But if the college scientific course took its students just where they left the academy scientific course in the elements, and led them through the higher general principles of the sciences, with enough of appropriately selected languages, literature and philosophy, and then turned them over to the polytechnic schools for their purely professional training, all three grades of institutions would be great gainers, and college scientific courses in particular would have a definite use and meaning, and hence a vitality which they do not—cannot now have.

But why is all this, which seems equally practicable and desirable, not already attained? Simply because all growth is a thing of time, and all great and enduring growth a thing of long time, as in case of an oak or a cathedral. If, then, the humanistic line of education, beginning with the universities of the middle ages, has been a thousand years in attaining its present development and perfected gradation of successive institutions, the naturalistic line has shown glorious force, energy, and adaptedness to real wants, in shaping itself as fully as it has within a single century.

What now is the way to the full attainment of the ideal now sketched? Simply a process of expansion, subdivision, and arrangement. By expansion, the present four-years' courses of the scientific schools would be extended to cover nine or ten years. By subdivision, all of the studies, and conspicuously among them the elements of drawing and modern languages, would be set back to the academy scientific departments; and the higher *general* sciences, including the general principles of descriptive geometry and perspective, to the college scientific courses.

There would then be none of that hurrying, crowding and smattering which are so painfully unavoidable when a single institution vainly struggles to do justice, in four years, both to elementary and advanced studies, and both to general and professional ones. Nor, on the other hand, would there be that pitiful want of elegant culture, qualifying the professional scientist to be a citizen, gentleman and scholar, which is the sadly heavy price paid under present arrangements for greater fullness and thoroughness on the *professional* side of his education.

In conclusion, the grand proposition contemplated by the title of my paper, and to which, as to a summit, I have from the outset been eagerly, if also tediously, climbing, is now this. In *general*:

The humanistic and naturalistic lines of education ; the former consisting principally but not exclusively of the study of man and his works, language, literature, history and philosophy ; and the latter likewise consisting principally but not exclusively of the study of nature as subservient to man, mathematics, physics and natural history—God's thought for man in nature, are distinct and separate, and adapted to corresponding differences in minds. These two lines, parallel and co-extensive, and mutually complementary, should be organized in two correspondingly equal and parallel lines of successive institutions ; *preparatory*, devoted to the thorough teaching of the elements; *collegiate*, devoted to the like teaching of the higher general principles, as means of exact and elegant, general culture, to qualify one for the general relations of life ; and *professional*, devoted only to professional training for a specific calling.

And in *particular* this result should be realized in the naturalistic line by properly utilizing the now comparatively aimless general scientific courses in colleges, in the way now pointed out; and by *more perfectly* adjusting and utilizing the academy scientific departments.

IV. Only a word, for the sake of formal completeness, can be added on the fourth division of our introductory table. In order that the graduate should be like a *growth* rather than like a *manufacture*, he should—as far as is possible in justice to the associated idea of *training* by minds already naturally developed—be developed by studies, the nature and extent of which should be more and more determined by his natural tastes and aptitudes.

THE VALUE OF ACCENT IN GREEK VERSE.

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There is a substantial agreement among scholars as to the nature of the ancient Greek accent; and especially beyond controversy is the fact that accent (*tone*) and quantity (*time*) were in this language made to serve their respective æsthetic purposes with greater independence of each other than in any other cultivated tongue. While in English, and the modern languages generally, the long syllables are as a rule the accented, the short the unaccented ones, in the more artistic Greek this coincidence of highest pitch and longest duration was as a rule avoided. The principle underlying this fact—the principle of *accent as a counteracting musical force*—I shall attempt to explain and illustrate, with especial reference to verse.

The *rhythm* of ancient verse is wholly a matter of the *time* (length) of syllables, regulated by a division into equal *measures* (feet), each with its *stress* (ictus), falling generally, though not always, on a long syllable in the measure. The Greeks, in their fondness for rhythmical effect, required their poets to observe the distinction of long and short with an exactness of method and a thorough-going consistency of usage that would be incredible, if the proof did not lie before our eyes in the extant specimens of the popular poetry. Let one of their verses, now, be pronounced with a careful observance of the elements of rhythm (*time* and *stress*) only, without change of *tone*, and one musical effect, an important one, is produced—such as if the movement of a tune were sounded on a single reed or pipe. But the spoken music of this verse acquires *ethical expression*, only when a pleasing variety of *tone* is super-added to the effect of rhythm—as the tune first becomes fully significant when played on an instrument capable of producing melody. This variety of tone is given to a recited verse by applying the *accents* of the spoken language—using the word *accent* in its proper Greek sense. Further, a series of similar verses, recited with both exact observance of *time* and correct application of *tone*, will appear monotonous and become wearisome to the ear proportionally as the sharp tones (accented syllables) coincide with the beats (ictus on long syllables) of the rhythm; agreeable and expressive proportionally as accents and ictus are kept apart. The Greek had an accentual system which reduced this monotonous coincidence to a minimum; at the other extreme stand the modern languages; while the literary Latin takes an intermediate position, but nearer to the Greek. “If we look at the first seven lines of the Iliad,” says Professor Hadley, in the Essay on Accent, “out of the forty-two cases of ictus which they present, only sixteen are found on syllables which have the written accent.” In the first seven lines of the Æneid, twenty-four of the forty-two ictus fall on accented syllables. But the majority of persons, in pronouncing these lines of Virgil rhythmically, will join an acute accent with every ictus, thus:

árm̄a virúmq̄e canó Trojāé qui primus ab óris
 Italiám fató profugús Lavínaque vénit
 litora, málutm ille ét terris jactátus et álto
 vi superum, saevaé memorém Junónis ob íram.

Whereas the proper accentuation is about as follows:

árma virúmq[ue]s cáno Trójae qui primus ab óris
 Itáliam fáto prófugus Lavináque vénit
 litora, mítum ille èt térris jactátus èt álto
 vi síperum, saévae mémorem Junónis ob iram.

The so-called *sing-song* effect of the former delivery is the result of departing from the ordinary prose accentuation of the words, and not of any too exact following of the rhythm. Greek and Latin verse cannot be recited with too exact observance of the elements of rhythm (time and stress); but every word must be accented (intoned) as in prose. Ancient poetry when thus properly delivered is never monotonous, except under those circumstances in which all good things become monotonous—when we have too much of them.

A well-known characteristic of the classical Greek poetry is that it was popular, not learned; natural, not artificial; genuine, not literary. Verses which would not “read themselves”—so common nowadays—were unknown to the ancients. Words were enunciated in exactly the same way in prose and verse, so far as regards quantity and accent—differently only in the ictus called for by the rhythm of a given passage, which a good ear catches at once; and this way of enunciation was that of correct popular usage in every-day life. Hence the Greek rhetoricians were studiously careful to avoid such collocations of words as would produce complete verses, and thus introduce a foreign element into the prose-rhythm of their speeches; and rules prescribed by them to this end have been preserved. It were to be expected, therefore, that the principle under consideration—that of a *musical balance of time and tone*—should be illustrated by isolated examples in word-formation and linguistic growth, independently of the artistic combination of words. This is found to be the case, and a few prominent examples will suffice here. “That drawing forward of the accent which is seen in the change from πόλεμος to πολέμον,” says Dr. J. H. Heinrich Schmidt (*Griechische Metrik*, p. 203), “whatever may have been its original etymological cause, could be understood by the Greeks speaking the language at a later period, only as a euphonic antithesis to the strong ictus and strong quantity of the final syllable.” Dr. Schmidt’s expression, *a euphonic antithesis*, contains the gist of this whole subject. The frequency of such accentuation, in all parts of speech, may be tested by casting the eye up and down the right-hand ends of a column of iambic trimeter lines, in which the syllable before the last is of course always short and without stress. On a page of Sophocles, opened at random, out of twenty-eight lines, I find fifteen with an accent on the syllable before the last, and twelve of the fifteen end with a syllable long by nature. Could any one who knows the Greeks suppose, even on first approaching the subject, that this disposition of accent—the most easily movable and adjustable element of Grecian speech—was due to anything but a sense of euphony and melody? Again, “So far from being disposed to shorten the vowel which follows the accented syllable,” I quote from Professor Hadley’s Essay, “the Greek shows rather a predilection for such forms as ἄνθρωπος, τίθημι, λυθήσοισθον. Latin proper names like *Dentatus*, *Modestus*, *Salernum*, the Greeks were perfectly able to pronounce with their Latin accent; there was nothing in their own system which forbade

it; yet we often find such words accented on the first syllable, Δέντατος, Μόδεστος, Σάλερνον—showing that an accented antepenult, followed by a long penult, was a combination agreeable to the Greek ear, and regarded with a kind of preference." A column of dactylic hexameters or anapaestic tetrameters will show the frequency of words thus accented; on a chance page of the Iliad, out of thirty-one lines, I find eleven ending with such words. An instance of this tendency in accentuation may be added, which is of especial weight here, as showing a change made in the direction indicated, consciously, in historical times. Several trisyllabic properispomena found in the Old Attic dialect (Thucydides) ἔτοιμος, ἔρημος, τροπαῖον, etc. (where the circumflex accent is due, as regularly, to contraction, of etymological growth), have in the New Attic become proparoxytones, ἔτοιμος, ἔρημος, τρόπαῖον—a change which could have been produced only by applying the euphonic principle under discussion, in accordance with the analogy of similar forms. Compare the accentuation of the very current word, ἔγωγε, from ἔγώ. These are a few instances, bearing more closely on the present subject, among the countless illustrations of the predominant *modifying euphonic* character of Greek accent. While the accentuation of many words, and many classes of words, is apparently arbitrary, and the effect of philological causes remote from the consciousness of the historical Greeks, yet the collective phenomena of accent show how largely the artistic sense worked in this matter, as in everything Grecian, to produce the finest æsthetic results—results of which we witness an intelligible and striking combination, when we test practically the power of accent in quantitative verse.

If a person attempt to recite a Greek verse in the manner proposed above, with observance of its rhythm (quantity and ictus) only, his voice will naturally take that pitch which he is wont to give to the unaccented syllables of a deliberately spoken sentence. This pitch may be called the *middle-tone* or *monotone*. When next he recites the same verse with that modulation of tone which the sense requires, his voice will take a higher pitch than the middle-tone, to produce the *acute*, a lower pitch than the middle-tone to produce the *grave* accents, while the *circumflex* will be a compound of acute and middle. Thus may be described some of the main phenomena of variation of accent in language generally; phenomena not peculiar to the ancient Greek, though in that tongue roughly indicated at present by a system of written marks. The natural variation of tone in coherent speech could be, at the best, but roughly indicated to the eye; no practical system of notation could exactly represent the infinite and delicate variations of accent. Nor, indeed, would anything be gained by such a notation; a proper modulation comes to the lips of an intelligent and well-trained speaker without effort, in accordance with the leading accentual characteristics of the language he employs. It was said above that the majority of persons in pronouncing a Greek or Latin verse rhythmically, would join an *acute* accent with every ictus, and this was said advisedly, although by so doing they deny to ancient verse even that relief of monotone which every correct reader gives to modern poetry. For in English verse, though accent and ictus regularly coincide, the tone is constantly varying through those gradations of acute and grave that belong to a natural elocution. There is, now, a smaller class of persons—the more intelligent—who, reading ancient verse both rhythmically and *by sense*, will give the rhythm-monotony *the same amount of tone-relief* as they would do in reciting English.

But ancient verse requires *more* tone-relief than modern, for an obvious and important reason. In the modern tongues there exists no sufficiently marked distinction of long and short syllables to produce a quantitative rhythm independent of accent. Accent is here employed to create the rhythm, frequently calling in the assistance of rhyme to that end. Now if modern verse, whose rhythm comes mainly from accent and stress, requires a certain variation of tone for euphonious recital, then the ancient, whose rhythm comes entirely from quantity and stress, should require a *greater* variation, to escape the double monotony of coinciding accent, length, and ictus. In the Greek language this greater variation is found in an effective and well-nigh perfect form.

Accent and quantity, in the ancient sense, are totally distinct elements of speech, and in the Greek these two elements, though necessarily conditioning and limiting each other, maintained their independence so largely as to bring that language nearest of all spoken tongues to music pure and simple. Proportionally as accent and quantity are kept apart, can each of them exercise its musical function with freedom and force—the *timing* of syllables which gives the rhythm, the *toning* of them which gives the melody. The *body* of a Greek word is made up of the quantity of its syllables; its *spirit* is the accent. Its body contributes to the weight and fibre of the sentence or verse, of which it forms a part; its spirit contributes to the character, animation, emphasis of that verse or sentence. The former is objective, fixed, gross; the latter is subjective, variable, subtle. When we carefully observe the quantity of the syllables in pronouncing a Greek word, but place the accent according to our English habit, we have an ancient body with a modern soul; when we disregard the quantity, for the sake of making the Greek accent a modern one, lengthening the syllable over which it is written, and shortening all the others in the neighborhood (as is too often done), we have a deformed body and no soul at all that is worth saving. When we recite Greek poetry or finished prose rhythmically, but with English accents, we show that the ancients had some sense of number and a few ideas besides; when we recite it both rhythmically and with the proper intonation, we bring out a fineness of Grecian literary art which is at once its most admirable property and the least apprehended by its students—the exquisite mutual adaptation of contents and form.

As regards the probable ancient *sounds* indicated by the Greek letters, the best authorities are in remarkable accord. One need but compare the arguments and views of G. Curtius, John Peile, and J. H. Heinrich Schmidt, to see how incon siderable are the points of doubt and controversy in this matter. There is, too, a wholesome unanimity of practice in our best schools and colleges at present with reference to the same subject. That “monstrosity,” the “English” vowel-sound system appears to have gone out; and classical scholarship rests on too secure a basis ever to allow an equally preposterous “Modern Greek” system to come in. Furthermore, such difference as may exist, known or unknown to us, between the *sounds* now given and those given by the ancients of any special period or locality, is of *unessential* moment in a liberal education; but the prevailing looseness of habit in regard to accent and quantity, whose respective functions are so well understood, is an offence against the *genius* of the whole language and literature.

If any answer be needed to that unscholarly question: “Shall Greek be pronounced by accent *or* by quantity?” it has already been given. He lacks a correct ear, who is unable, after careful study and practice,

to distinguish between δμοιος and δμοῖος: between συμφίλει and συμφιλεῖ: between Ἀργος and ἀργός: and so on. Such a person, on hearing a passage of Greek poetry or artistic prose recited, with observance of both sense and rhythm, might fail to understand why the written primary accent of every word does not assert itself as strongly and definitely as that of every other, without regard to its rhetorical value in the premises; to the influence of secondary and tertiary accent, and of sentence-accent; or to the reader's idiosyncracies of expression:—without regard, in short, to the universal principles of a rational elocution. The following passage from Aristophanes, which I shall try to read with due regard to both accent and rhythm, may serve as a fair illustration of the characteristic principles of Greek recited verse. It is composed in $\frac{2}{3}$ time—a measure unknown to modern poetry, which employs only $\frac{1}{2}$ time, in reading; and being anapaestic, it occasionally takes the ictus on a short syllable of the measure. A few pertinent statistics are appended.

DEMUS REDEEMED.

ARISTOPHANES, *Knights*, 1316–1334.

ΑΓΟΡΑΚΡΙΤΟΣ

Εὐφημεῖν χρὴ καὶ στόμα κλείειν καὶ μαρτυριῶν ἀπέχεσθαι,
καὶ τὰ δικαστήρια συγκλείειν, οἵς ἡ πόλις ἥδε γέγηθεν,
ἔπι καναΐσυν δὲ εὐτυχίασιν παιωνίζειν τὸ θέατρον.

ΧΟΡΟΣ.

ώ ταῖς λεφαῖς φέγγος Ἀθῆναις καὶ ταῖς νήσοις ἐπίκουρε,
τιν' ἔχων φήμην ἀγαθὴν ἥκεις, ἐφ' ὅτῳ κνισῶμεν ἀγυιάς; 1320

ΑΓΟΡΑΚΡΙΤΟΣ

τὸν Δῆμον ἀφεψήσας ὑμῖν καλὸν ἐξ αἰσχροῦ πεποίηκα.

ΧΟΡΟΣ

καὶ ποῦ στιν νῦν, ὡ θαυμαστᾶς ἐξενρίσκων ἐπινοίας;

ΑΓΟΡΑΚΡΙΤΟΣ

ἐν ταῖσιν λοστεφάνοις οἰκεῖ ταῖς ἀρχαίαισιν Ἀθῆναις.

ΧΟΡΟΣ

πῶς ἀν ἰδοιμεν; ποίαν τιν' ἔχει σκευήν; ποῖος γεγένηται;

ΑΓΟΡΑΚΡΙΤΟΣ

οἵς περ Αριστείδη πρότερον καὶ Μιλτιάδη χννεσίτει.
δψεσθε δέ καὶ γὰρ ἀνοιγνύμενων ψόφος ἥδη τῶν προπυλαίων.
ἀλλ' ὀλολύζατε φαινομέναισιν ταῖς ἀρχαίαισιν Ἀθῆναις
καὶ θαυμασταῖς καὶ πολυνύμοις, ἵν' δὲ κλεινὸς Δῆμος ἐνοικεῖ.

ΧΟΡΟΣ

ώ ταὶ λιπαραὶ καὶ λοστέφανοι καὶ ἀριζήλωτοι Ἀθῆναι,
δείξατε τὸν τῆς Ἑλλάδος ἥμιν καὶ τῆς γῆς τῆσδε μόναρχον. 1330

ΑΓΟΡΑΚΡΙΤΟΣ

δδ' ἐκεῖνος δρᾶν τεττιγοφόρας, ἀρχαίω σχήματι λαμπρός,
οὐ χοιριῶν δζων, ἀλλὰ σπουδῶν, σμύρνη κατάλειπτος.

ΧΟΡΟΣ

χαῖρ', ω βασιλεῦ τῶν Ἑλλήνων· καὶ σοι ξυγχαίρομεν ἡμεῖς.
τῆς γὰρ πόλεως ἄξια πράττεις καὶ τοῦ Μαραθῶν τροπαίον.

Anapaestic tetrameter; time $\frac{2}{4}$; seven ictus (four primary and three secondary) to a verse.

Line 1316 takes 4 ictus on unaccented syllables.

" 1317	" 4	"	"	"
" 1318	" 7	"	"	"
" 1319	" 4	"	"	"
" 1320	" 5	"	"	"
" 1321	" 4	"	"	"
" 1322	" 3	"	"	"
" 1323	" 4	"	"	"
" 1324	" 5	"	"	"
" 1325	" 5	"	"	"
" 1326	" 3	"	"	"
" 1327	" 6	"	"	"
" 1328	" 5	"	"	"
" 1329	" 4	"	"	"
" 1330	" 2	"	"	"
" 1331	" 3	"	"	"
" 1332	" 4	"	"	"
" 1333	" 4	"	"	"
" 1334	" 3	"	"	"

Of the 133 ictus, twelve fall on short syllables, of which eight are unaccented.

CHARACTER IN THE TEACHER.

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The man who is to impart knowledge must, of course, possess it. Some power of acquisition, a tolerable store of learning, at least in his own department, and a certain facility of intellectual communication are qualifications for teaching that may fairly be presumed. But thus only shall the instructor be furnished for his work? Nay, to be content with this is crime against the student. Such men may have marvelous power of acquisition. Let them find their use as book-worms. They may accumulate vast learning by laborious investigations. Let us thankfully use the results. They may give scholarly reputation to an institution, but unless they have personal power, unless they are able to impart themselves, they are unfit for the higher work of the teacher. So, then, by character in the teacher we mean those moral elements that make up one's personality, and we affirm that the possession of such sources of power is far more important than mere intellectual discipline and equipment, and immeasurably transcends all questions of external facilities and appliances.

I. As a primal and indispensable requisite we name MANHOOD. The qualities which make up the ideal man are essential to the ideal teacher. We instance a few only that bear upon his personal relations.

There must be *freedom from all affectation*, whether of thought, as manifested in effort after originality for originality's sake, of feeling, as illustrated in a false and unhealthful sentimentalism, or of manner, as betrayed by any assumption in bearing, or by striving for sensational effects. Not what a man takes on, but what he expresses of his own proper nature, affords genuine power. If thorough naturalness and perfect simplicity be wanting, the healthful simplicity of youth will quickly detect the deficiency.

The teacher must also illustrate *high moral instincts*. Whatever his department of instruction, he will often be called to pronounce his ethical judgments. If the very grain of his nature be not loyal to the great principles of right, the flaw will be manifest. In all the relations of discipline especially, his integrity must be transparent. He must be strictly just. All moral subterfuge, indirection and Machiavellianism are sure to recoil, and their success would be more deplorable than any evils they might be employed to remedy. He must be a man of honor. In manifold ways, amid the intimate personal relations which he will hold to the student, this more delicate sense of justice will be demanded. The scrupulous honor of Arnold, the exact justice of Wayland, were buttresses of strength. To fail here is to have the supports of moral influence fatally sapped. Let students make up their mind that a teacher is "mean"—a quality more easily and certainly detected than defined—and his hold upon them, for all the higher ends of teaching, is gone. Not only in his relations to his pupil, but to the community at large, his integrity must command respect and confidence, or he must give way before a current that he cannot stem.

The crown of ideal manhood is *unselfishness*. In this, as in many other things, the teacher and the preacher must be as one. In resolute mastery of self-indulgence, in uncomplaining endurance of vexations, in cheerful subordination of personal tastes, in the subjection of private aims to his supreme devotion to the student's good, he has abundant

opportunities to cultivate an unselfish spirit. Like the Great Teacher, he must be able to say: "I came not to be ministered unto, but to minister." He will find his highest recompense, not in emoluments and distinctions, but in watching the growth of worthy sentiments, and the increasing power of high ideals in his pupils, as illustrated by successful careers and noble living.

The manhood of the teacher is to the student the standard of that conscious or unconscious assimilation which is more or less inevitable. His whole tone and spirit ought to be every way healthful. No less important, however, is the consideration that high character is the source of all true *authority* in the teacher. One of the Greek writers truly said: "There is no culture from him who does not please." Popularity, indeed, often attends what is superficial and spurious. Catering to the lower impulses of the student may, for a time, secure favor; but, sooner or later, all worthy popularity comes to him who deserves it. It is but another name for authority. Without this, the effort to impart knowledge will meet but a listless reception, and any attempt to influence character will be repelled. This authority does not of necessity exclude fear, nor does it always imply affection; but it is grounded in respect. Mere attainments will not secure it, nor is there any necessary loss of authority in the confession of mistakes and ignorance.

He who lacks authority of character will suffer disparagement in his learning and capacity. The ordeal that tests him is no trifling one. The student must believe in him. If it is true that the child has instincts which, by subtle drawings and antipathies, serve as moral indices, it would seem that young men and young women have preserved more of such intuitive power than we who have grown further away from the susceptibilities of childhood. Nowhere sooner than in such a community does a sham utterly fail. Untoward influences of a temporary kind may give rise to perverse and malicious currents of sentiment; but the general judgment of a student community, for a considerable length of time unfavorable to an instructor, is probably right.

True authority implies weight of character. In our own land and time it has characterized none more remarkably than Wayland, at Providence, and Taylor, at Andover. Nothing so strongly enforces discipline, or commends truth. No weight of scholarship, and certainly no official parade, no "little brief authority" of a factitious nature, can be a substitute. It is this personal authority which identifies the school and the teacher. Rugby was Arnold, and Arnold was Rugby, while Union College, for half a century, was almost synonymous with the name of Eliphalet Nott. The success of such an instructor rests not on a mere *ipse dixit*. It is not a moral compulsion that aims to break down the student's convictions. It creates, however, a presumption in the teacher's favor; it engenders a proper and healthful deference, without which there is no true culture. We do not insist on respect for the office. We mean that a man's character is more than his position. It is scarcely necessary to add that only the religious man can fully illustrate the authority of manhood. By a broad and healthy nature, by his moral depth and tone, by the sense of responsibility and dependence upon God, he must, in the totality of his influence, be worthy of his office. Only a man can fashion men.

II. High success demands also ENTHUSIASM. This implies inward propulsion, fervor of spirit, and ardor of manner. It is an exaltation of aim and feeling above the common moods of men. Here, too, nature, in

one's temperament, decides much beforehand; but enthusiasm is not incapable of increase. It grows by what it feeds on. There must be genuine *thirst for truth*. It revealed loftier conceptions when the teacher began to call himself, no longer "the wise man," but the "lover of wisdom." To dole out facts from an unreplenished store is not teaching. Private study and personal investigation must renew and augment the supply. To meet all demands is not enough. Unless the mind be kept active by fresh accumulations, not even old truths can be so presented as to quicken and expand the student. Earnest pursuit of truth is his only safeguard against routine.

Enthusiasm involves an *exalted estimate of the teacher's work*. This work is not a mere business. Much less is it a chance resource for the impecunious. Until salaries at least rate higher, only the lower grade of talent and character will be drawn by sordid motives. Let it never degenerate to a mere shift of employment. One's attitude toward his work is of vital importance. He who feels that his powers might be more nobly engaged is unfit for it. Arnold might have shone in statesmanship, but he placed teaching higher, and indignantly resented the sneer that he was "cutting blocks with a razor." This high estimate of the teacher's art is necessary to enthusiasm. Energy may be exerted upon what is below one. Even earnestness may attend poor and inadequate conceptions. Enthusiasm is a quality livelier and more exalted. It is the artist's secret. It proceeds from the attraction of an ideal that is never reached. Ambition is a sorry substitute, since it usually looks no further than to position and emolument.

Enthusiasm must largely spring also from *a sense of vocation*. The notion of a calling belongs not to the ministry alone. If the teacher is, in a great part, born, not made, we may expect his call to appear in his consciousness. He will at least find that delight in his work which will prove his capacity and confirm his vocation. If one deem himself "called to teach," when none are called to learn, experience will correct his self-delusion. The teacher cannot be eminent unless the drift and under-current of his nature are in the channel of his chosen profession. He who has not known the joy of teaching, whose imagination does not kindle as his work opens up before him, is to be commisserated. What else can reconcile him to his vexations, or content him with his appropriate rewards, without envy of those who in other spheres are amassing wealth or winning applause? This enjoyment in teaching, which accompanies the sense of vocation, tends to secure permanence in the relation, and so supports it by that moral capital which only permanence supplies.

Enthusiasm in the teacher will be fed, moreover, by a *central devotion to his work*. I say "central," for one's life must have scope and play. He must not fail in breadth of interest. He is preparing men for the world. If for no other reason, he must be abreast with its movements. Dr. Nott was largely identified with legislation and all public progress, but not a whit the less was his proper work supreme. One's paramount interest must be in teaching. Outside reputation is desirable, but loss of power at home is too great a price. So far as learning is tributary to teaching, and all learning may be, the more the better, but not so with learning for mere learning's sake. If possible, let all our institutions be both seats of learning and schools of intellectual and moral training. But if in any case the two cannot be united, let us not hesitate between the merely learned professor, and the devoted, enthu-

siastic teacher. Let us have men who, like Arnold, "could hardly live without teaching." Enthusiasm is not confined to poetic and imaginative natures, nor to dazzling genius. It may be kindled in the less-gifted man that is wholly given to his work.

Institutions are not for themselves. They are not to be conducted as corporations. They do not exist for their faculties. They have more to do than to maintain traditional reputation. They are for the students who attend them. However learned their professors, untiring in investigation, and successful in discovery, the student has paramount claims—a right to demand that all shall be subsidiary to his interests, that private study, general reputation, profound discovery, or brilliant authorship, shall not diminish, but rather add, enthusiasm in teaching.

III. Both the investigation and the communication of truth will be marked, in the true teacher, by CATHOLICITY OF FEELING. Otherwise enthusiasm will often be fanaticism in himself, and dogmatism towards others. Catholicity primarily implies honesty. The teacher should be neither a slave of prejudice, nor a bundle of prepossessions. He is not called to advocate systems, nor to bolster up theories. If he understands this, he will not seek to shape facts into prescribed moulds, nor to adjust the truth to predetermined measurements. He will have his theories and his system, but they will be his not by legacy and tradition merely; for they will be the products of facts apprehended, classified, and correlated by independent thought. Nor even when by his own processes he has reached such a system, ought he to be narrowly intensive in its maintenance. Let him feel that truth is broader than any theory—more comprehensive than any system. This is but to say that the finite cannot compass the infinite. It is to accept the lesson of history.

The processes of the world's thought have always been, in great measure, *tentative*. Philosophic speculation has rested, now on this phase of truth, now on that, touched here one problem and there another, often reverting by cycles upon itself, and again soaring toward the empyrean. Science has made its successive generalizations, and these have in turn given way before wider induction and more exact classification. Its path is strewn with exploded theories, and problems still obscure await their oft-sought solution. The truths of theology have been interpreted and formulated by successive thinkers. Now this doctrine has received emphasis, and now that has assumed the foreground. Statement has followed statement, each colored by the individuality of the framer, and adapted to the real or supposed spiritual needs of the age. And in every period, how lamentable has been the mistake, in theology, science, or philosophy, to assume in one's thinking or teaching that truth has been attained and compassed, grasped and confined, in its totality, within some accepted creed, theory, or system! Has nature unbarred all her recesses? Has she unlocked all her secrets? Have the great problems of philosophic speculation found complete solution? Or, in theology, has reverent inquiry reached its *ultima thule*? Are the treasures of the Divine Word fully laid open? Are the mysteries of God's nature and of God's dealings with man fathomed to their depths? Not till we can answer these questions affirmatively may we write "infallible" upon system, theory or creed, and dogmatize *ex cathedra*, with anathemas upon "him that followeth not us."

True catholicity is entirely compatible with earnest conviction and decided assertion. The ideal teacher is not a man whose mind is in suspense on all leading questions. In all that is central, he must have opinions, and

must teach -what he believes. Otherwise, how shall the student have faith in the reality of truth, or be encouraged to seek it? Shall he succeed in arriving at conclusions, when his teacher has reached none? No wonder that the sophists engendered skepticism. Yet Socrates, though the champion of objective truth, asserting the duty and possibility of its attainment, cherishing convictions on all fundamental questions no less positive because they underlay his unique method, was thoroughly catholic in his loyalty to the guidance of sound reason wherever it might lead.

Catholicity mainly concerns the circumference of one's thinking. One ought to hold some views so central and well-considered that he need not re-examine them at the challenge of every comer. As years go by, the speculations and theories that have floated on the circumference will, one by one, fit away, or will become a part of the fixed guiding-lights of his thought. But if enthusiasm for truth continues, the outer limits of his thinking will still be undefined, and that spirit of inquiry which still leads him forth in unappeasable aspirations will impart catholicity to the affirmation even of what he most certainly holds.

We cannot accede to the view that the teacher ought never to inculcate positive opinions upon mooted questions. The issues involved are often too vast. Besides, always to suspend judgment discourages even inquiry. To conceal convictions would be as unmanly as it is impossible. Rather let beliefs be expressed with ingenuousness, opinions urged with fearlessness and candor, with inquisitive mind, but conscientious heart.

It is needful to feel sufficiently the force of objections. Difficulties are met in every line of inquiry. The domain of axiomatic truth is limited. Mathematical demonstration covers but a portion of the realm of fact. For the rest, difficulties must be weighed and probabilities balanced. He who under-rates an objection, even in the interests of truth, is guilty of "pious fraud." He has done yet worse, for he has robbed his pupil of his probation and his discipline. Intelligent assent is worth far more than blind submission. Moreover, a difficulty unfairly set aside may return to overpower one. Previous concealment, on the teacher's part, may prepossess the student in its favor.

In fine, the genuine teacher will recognize truth wherever found. He will seek out its elements everywhere with a loyalty that shall gladly hail even its partial aspects. Half-truths will not be confounded with sheer errors. Truth does not gain, but loses, and we lose, also, if we refuse to see that it is partial truth which gives vitality to many a system on the whole erroneous.

We must concede the honesty of other thinkers, and appreciate their position. The intolerance of the human will is the secret of dogmatism, as it has been of persecution. How often is an opponent's position unfairly or weakly stated! The "man of straw" held up in the lecture-room is easily demolished, but the flesh-and-blood antagonist of real life does not "down" at mere bidding. Men do not thank their former instructors for such concealments, and condone the mistake only as they ascribe it to narrowness or timidity. If we could measurably transfer ourselves to the position of others, and take into account their temperament, their training, and their surroundings, we should not necessarily lose hold of our convictions; but we should learn much of that charity which prompts at times the inquiry: "Who art thou that judgest another man's servant? To his own master he standeth or falleth."

IV. As another grand requisite, we name SYMPATHY WITH THE STUDENT. Some, indeed, affirm that the relation of teacher to student is merely professional. It is assumed, that both are interested in the particular branch of study, that the student looks to the instructor for the advantage of his superior attainments, and that this is all. Instances may, perhaps, be cited of men who have won reputation and had brilliant success with but limited personal contact or influence. Rare stores of learning and peculiar brilliancy of genius may, in part, have compensated for the defect; but such cases are quite exceptional. We believe, on the contrary, that the teacher should be identified with the student, and have a hold upon his confidence and love.

He must, first, take *interest* in him. Not that general sort which exhausts itself in common-place, goodish platitudes about the "rising generation," but an individual and genuine interest. Woe betides the teacher who feigns what he does not feel, and it is thoroughly culpable to regard the student's improvement or to seek his good-will merely as an aid to one's own reputation and advantage.

Now, it is easy to be interested in the gifted and the brilliant, the well-disposed and the amiable. No temptation is more subtle and agreeable than to work disproportionately for these. All higher instruction is especially appreciated only by the few whom it most profits. One may properly cherish peculiar satisfaction in choice intellects. But we insist that no admiration for these shall detract from the doing of ample justice to men having various inferior gifts. Let the dullest feel that his instructor believes in him, and has faith in his future. The assurance of this will be his chief inspiration. Scholastic discipline may, in itself, do little for such; but they may absorb from the common life of the school much that will repay sympathetic interest. Unless a young man be at least capable of deriving a certain growth from the atmosphere of study and instruction, he ought not to be encouraged to continue in any institution.

The teacher ought to have sufficient discernment to discover the strong point, the hopeful element, the feature of promise, in every student. It may be different from his own bent; but in spite of that it should elicit his interest. He must appreciate his pupil's purposes, profession, or calling, and know how to hold up the highest ideals for every vocation. It is blameworthy to be so interested in any single calling as to undervalue any honorable employment to which the student proposes to devote his powers. In this qualification Arnold and Nott were conspicuous. Their sympathy with all worthy pursuits evinced a wholeness and healthiness of manhood, and fitted them the better to instruct and to win young men.

Sympathy signifies *power to enter into the student's feelings*. The first question to every candidate for teaching ought to be: "Do you remember how you felt when you were a student?" It is not enough to insist on acquaintance with human nature. Such knowledge is quite too general. The teacher must understand student-nature, which is *sui-generis*. It is much to be in sympathy with young men generally; but young men engaged in study, linked in class relations, and sharing a community of life, present additional elements greatly complicating the problem of their management. Student-life has its peculiar tendencies, customs and spirit, its distinctive sentiments, its diverse and apparently unaccountable currents. Caprices, freaks—nay, epidemics—often attend it. To these the teacher must be habituated. He must be able to enter into the feelings that underlie them, and, in some sense, appreciate them. The currents of his own life should be fresh. Somewhat of the buoyancy and exuber-

ance of the boy-spirit is desirable to promote mutual understanding. Do not seek out teachers among those who continually remind us that "the former times were better than these." The power to enter into the student's feelings will foster patience and good temper, and that forbearance which comes by distinguishing the thoughtlessness of sport from depravity and malevolence. Even the wayward and perverse may not rightly be shut out from that personal interest which might keep them from ruin. The moral standard of student-life is often deplorably low, but in order to raise it higher a certain temporary toleration is sometimes demanded. To inculcate lofty principles is better than to impose stern restrictions; and if sympathy with the student be not lacking, high character in the teacher will be far more effective than petty repression. It was the policy of the Roman Agricola, no less appropriate to a teacher than to a general, "*omnia scire, non omnia execuiri.*"

If it be feared that sympathy will tend to indulgence, let it not be forgotten that the student's feelings are not all upon the surface. Beneath his floating sentiments are his forming convictions; behind his passions and his inclinations is his manhood. He who knows these deeper moods will often cross the surface-currents, calmly conscious of his hold upon the student's interior sympathies.

Above all, true sympathy *takes in another's case*, and enters not into his feelings only, but into his condition. It recognizes the student's possibilities, and engenders in the teacher a sense of responsibility as to their realization. "No parochial ministry," said Arnold, "can be more a cure of souls." "My comfort depends more and more upon their good and bad conduct." "My work has all the interest of a great game of chess, with living creatures for pawns, and the adversary, the Devil." The teacher will sometimes be content to part with present good-will, confident of future approbation. A just sympathy will not occasion weak compliance with the transient freaks of willfulness and passion. Faith in the student will insure fidelity to him.

The maintenance of this sympathy, in all its significance, is no slight self-sacrifice. It is an expenditure of life's best forces, but the recompense is ample. Happy is he who can replenish his spent energies out of tender and enduring friendship—out of endearing and delightful memories.

V. It remains to notice a crowning personal qualification in the teacher, and the crucial test of his success—I mean the POWER OF INSPIRATION. This is, in great part, the resultant of all the other elements and forces of his nature.

It must be felt, first of all, in *holding the student to his work*. We are entitled to assume that the teacher's personal enthusiasm has overcome in himself all sense of irksomeness in his duties, but he ought to have such abounding interest, and such ability to impart it, as shall do the same for his pupils. Fortunate is the student when the teacher's magic touch has power to illumine and lend attraction to every task.

A *love of learning* will thus be awakened. It is a sorry comment on much of our teaching that the graduate often drops so soon all scholarly pursuits. The practical exigencies of some calling or business which fully engages attention have much to do with this, but it ought to be the instructor's constant aim to develop scholarly tendencies and cultivated tastes, and in very many the inspiration of the teacher will determine the pursuit of knowledge as the work of a life-time.

More important still is the *ability to stir and quicken thought*. Let the

student forget what he may, if he comes out from the teacher's care a thinker. The instructor must himself be a thinker, not a mechanical hearer of recitations, hampered by methods and tied to forms. Not upon subjects of instruction alone, but upon every topic which personal intercourse with his pupils will suggest, the teacher must stimulate mental activity. Why does not recall with kindling of spirit times in his student-life when the lesson of the day suggested, perhaps remotely, some interesting point which the mechanical teacher would have ruled out as not belonging to his department, but which furnished to the more apt instructor the text for some grand, inspiring talk, under the spell of which time passed unheeded, and the ringing of the bell brought dismission, with the lesson but half recited, but the class all enkindled and alive with some great truth or lofty motive? Such a power of talk, not the mere flow of verbosity, or effervescence of sentimental twaddle, but the real kindling of sacred fire, is of inexpressible value. Many a student who has little aptitude for formal, scholarly attainments, can thus be lifted, according to his measure, toward higher levels of thought and aspiration.

The true teacher, moreover, will afford *impulsion to noble living and elevated character*. He will not only make work inspiring, but life earnest and hopeful. In a variety of ways he will inevitably reveal and impress himself. "To come under Taylor's influence," says a graduate of Phillips Academy, "was to move into a new system of gravitation." In him inspiration was not incompatible with rigid discipline. This personal power must be exerted not to produce scholars alone, nor thinkers alone, but to develop high-toned Christian men.

To constitute this power of inspiration, the other personal elements combine. Manhood and its resulting authority conduce to it; sympathy prepares the way; while enthusiasm, catholicity, and earnest conviction are vital constituents. Dogmatism may inspire, but only catholicity can healthfully inspire. There is no inspiration, however, without conviction. Even a physical element enters in. That product of organization and of temperament which we call personal magnetism is a part of what the born teacher brings with him. It is more than the energy which, in every walk of life, promotes success; it is that ability to draw men, which to a few in all departments of activity lends wondrous, mysterious power. Such teachers appeal to the student's imagination, and are what the student's nature craves—something to boast of.

Without inspiration, few teachers have been eminently successful; with it, some men destitute of facilities have done work of superlative excellence. Humble men, unlearned men, have thus often accomplished what men of sounding reputation have failed to do. Of this power to inspire, large or pretentious universities have no monopoly. It is not unknown to our smaller colleges, our academies, and our common schools. Buildings, apparatus, libraries, text-books, these add efficiency, but they do not constitute power. From Socrates and Plato down to the present, the world's teachers have been those who have ministered inspiration, and given impulse to thought and life.

If such are some of the personal elements in the teacher, then American society needs not so much additional institutions, or increased appliances and facilities in them, as men possessing, so far as possible, these moral qualifications. Nobler ambition no one of us could cherish than that, after a life of self-forgetting devotion to our work, it may be inscribed on our tombstones, and more sacredly enshrined in the hearts of our pupils, "He was a true teacher."

COLLEGIATE EDUCATION OF WOMEN.

By President L. CLARK SEELYE, D. D., of Smith College, Northampton, Mass.

Four years ago, I was asked to read a paper upon the collegiate education of women before the American Institute of Instruction. The subject was then discussed in the light of general principles; permit me to-day to discuss it in the light of established facts.

It is now nearly seven years since \$400,000 were placed in the hands of trustees to be used as a fund for the establishment of a woman's college in Northampton, Mass. It was to be called Smith College, from its founder, Miss Sophia Smith. In 1871 it was duly incorporated and chartered by the commonwealth of Massachusetts, with full powers "to grant such honorary testimonials, and confer such honors, degrees and diplomas as are granted or conferred by any university, college or seminary in the United States." The design of the founder, as stated in her deed of trust, was to provide for women "means and facilities for education equal to those which are afforded in our colleges for young men." The trustees, therefore, determined at the outset not to start an institution and call it a college when its work was substantially that of a secondary school, nor to eliminate, in deference to any imagined feminine weakness, those branches of knowledge which philosophy and long experience have proved are essential to the most rapid and symmetrical intellectual growth. If the classics and mathematics were so serviceable in the higher education of men, no valid reason could be found why they should not be equally serviceable in the higher education of women. The requisites for admission were accordingly made the same as in those of the foremost American colleges. Greek, Latin and mathematics retained their time-honored positions and importance, while the sciences and the modern languages received that attention which has been accorded them in later systems of education. In short, a course of study was devised as broad, comprehensive, and thorough as at Harvard, Yale, Amherst, or Williams. The only essential difference consisted in the introduction of music and art as coördinate studies, to be pursued in connection with other optional courses, and without extra expense. "For once," the trustees said, "let the experiment be thoroughly tried. Miss Smith has dedicated her fortune to the work. Fidelity to her wishes at least demands that the college should not lower its grade of scholarship for the sake of attracting a larger number of students, or in concession to any plea of woman's intellectual inferiority."

Nor were the trustees less solicitous concerning the social and moral character of the institution. They were not unmindful of the dangers which have attended the higher education of woman. The conspicuous examples of some who had sacrificed the graces and strength of womanhood for mere intellectual power were impressive warnings to avoid, if possible, such deplorable results. The founder herself seems to have been conscious of this objection when she said: "It is not my design to render my sex less feminine, but to develop as fully as may be the powers of womanhood." How to preserve the woman; to intensify and increase every womanly gift, to cultivate modesty, refinement, womanly delicacy; how to produce and preserve pure hearts, sound bodies, gentle manners; these were problems no less earnestly considered than those relating to

the purely intellectual culture. In the solution of these problems, plans were adopted very different from those of any other existing educational institution. It was determined to erect a large central building, which should be exclusively devoted to the distinctively intellectual work. In it were to be the recitation and lecture-rooms, cabinets, laboratories, apparatus, and the various appliances needed for instruction. It and the buildings subsequently erected should be only two stories high, and all the ordinary recitation and working-rooms should be upon the first floor. Around this academic building, situated on grounds laid out as a private park, were to be grouped smaller dwelling-houses, in which students might find the comforts, quiet, and social atmosphere of a private home. At the head of each of these separate families of twenty-five or thirty students there should be a lady of culture and refinement to give direction to its social and domestic life. From her position she would have the best opportunity of becoming acquainted with personal peculiarities, and of giving in familiar social intercourse the benefit of her example, counsel and assistance to those under her charge. In this way it was hoped might be combined not only the advantages of a great literary institution, with an extensive corps of teachers and costly educational appliances, but also those of a quiet, refined home-life, where gentle manners and womanly grace are cultivated as essential parts of an ideal womanhood. The founder of the college was a Christian woman. Deeply conscious of the indebtedness of her sex to Christianity, and yet possessing the broadest charity and tolerance, she was desirous that the atmosphere of the college should be distinctly Christian, and at the same time free from all sectarian bias. It was thought better, therefore, not to form a college church, as the college was to be in the midst of a large town, where all leading Christian denominations were represented, but to leave students free to follow individual preferences in the selection of places of worship. There were to be, however, regular devotional exercises; and it was hoped, without turning the college into a Sunday school, the spirit of a truly catholic Christianity would make its legitimate influence felt in every department of instruction.

How have these plans and expectations been realized? The college opened three years ago for the reception of students, four years having been taken to mature the plans and to allow the funds to accumulate. The large academic building was then erected, and one dwelling-house for students. By postponing the opening, the college has been able to pay for all its buildings and its working expenses out of the income of its original endowment. For the sake of securing a more harmonious organization, the trustees decided to admit at the opening only those who were prepared to enter the first or Freshman class, and to form each succeeding year a new class, until the four classes were complete. There was a large number of applicants, but of all the candidates only fifteen could be found who were qualified to enter. The next year we had a similar experience, but succeeded in forming another class of eighteen. The next year the beneficial effects of a rigid adherence to the original standard became apparent in attracting a far greater number of thoroughly prepared students, and forty-five were admitted. This year forty have already entered at the June examination, and a number more are waiting for the second examination in September. Two new dwelling-houses have been added for the new classes, and others will be erected according to the original design as the classes increase. The plan is so elastic that the accommodations can be increased to almost any

extent without disturbing in the least the quiet social life in the separate families in which the students are grouped.

Our history has thus already demonstrated that a female college, no more than a male, is obliged to do both preparatory and collegiate work. Secondary schools will be established when the colleges render them desirable or necessary. The demand will create the supply. When Smith College opened, comparatively few knew of its plans or requirements. Secondary schools were, however, soon organized to prepare for it. Many of those already established modified their courses to meet its requirements, so that now young girls in different parts of the country are pursuing systematic study with the design of entering college. We do not think preparatory and collegiate classes can be united in one institution without injury to both. The regulations which are beneficial and necessary for younger students are apt to become irksome and injurious to the older. Surely the terms secondary and higher, as applied to schools, indicate a logical rather than an honorary sequence. Why, then, should it be so much more difficult in girls' schools than in boys to confine instruction to those branches which the students are best qualified to receive and the schools to give? Female education sadly needs the co-operative system. Secondary schools cannot flourish if colleges with superior endowments usurp their province. The colleges will fail to realize their true ideal if encumbered with a preparatory department.

Our history gives additional evidence, if evidence on that point be needed, of woman's capacity for the highest intellectual culture. For three years young ladies have been taking a course of study as varied, as thorough, and of as high a grade as young men have taken in our best colleges, and have accomplished their work as successfully. We have frequently had professors from male institutions to give instruction, and their testimony is to the effect that the girls study better than the boys, and that the average scholarship is higher. It would certainly be difficult to find anywhere greater enthusiasm in the search for knowledge, or greater success in its acquisition. There is the same variety in intellectual preferences and capacities which young men manifest. In no one department of study has there been found marked deficiency. We were told that it was absurd to arrange for the study of the higher mathematics, for the feminine mind was deficient in mathematical capacity; but we have thus far had a larger proportion of fine mathematicians than can be found in corresponding classes of young men. Greek, which has been so often eliminated from female education as too great a strain on the feminine intellect, has from the first been a favorite study, and there are Greek scholars that would honor any institution. Indeed, I think it may be truly said that there has been greater uniformity in study, greater interest in all departments, than is usually the case in college classes. This may, perhaps, be attributed to the select character of the students. It is, at least, evidence that women are not wanting in any capacity essential to master a college curriculum.

Our experience has also demonstrated the fact that women can be highly educated, not only without injury, but with benefit to health. Some of our best scholars have steadily improved in health since entering college. Some who came so feeble that it was doubtful whether they could remain a term, have become entirely well and strong. Not a single disease has been contracted during the three years by any inmate of our dwelling-houses. Not a single student, as far as I am aware, has been physically injured by study during her connection with the insti-

tution. Why should they not be healthy? There is greater regularity in their life, greater attention given to health, greater sanitary precautions than can be found in ordinary homes. Said a distinguished professional gentleman: "My daughter, strange as it seems, is in better health at Smith College than she is at home. She is apt to grow thin and nervous in vacation, and steadily improves during term time." There seems good reason for attributing the almost unparalleled health of the students to the plan of arranging them in small families as well as to special sanitary regulations. The college is not a sanitarium. It does not undertake to cure chronic diseases; to restore enfeebled constitutions, or to secure exemption from the ordinary ills of human life. It simply claims that by reducing nervous excitement to a minimum, and adopting those regulations which intelligent experience naturally suggests, there need be no greater injury to the health of woman than to the health of man in a collegiate education. On the contrary, the intelligence thus acquired becomes a physical no less than an intellectual benefit. It ensures better care for the body as well as for the mind and soul.

But what about the womanhood? Has the woman been sacrificed to learning? Has she lost in feminine delicacy, modesty, and refinement as she has attained greater intellectual strength? These are questions most frequently and anxiously asked; and, if they must be answered in the affirmative, I admit a college education for women has been a lamentable failure. If learning and intelligence are to make more common that type of women which Louisiana politics have so conspicuously produced, then the sooner colleges are closed to women the better. Happily we have as yet seen in the culture we advocate no tendency to produce such monstrosities. On the contrary, I have been glad to notice among the students themselves a growing disinclination to imitate the distinctively masculine traits of male colleges. They are very jealous about being deprived of intellectual privileges, they are no less jealous of their womanly attributes, and show little disposition to introduce those customs in which the coarser fiber of the masculine mind is most clearly manifest. Instead of hazing new-comers, the second or Sophomore class will give them a reception in the art-gallery, and introduce them to the older students with the courteous hospitality which good-breeding dictates. Social receptions are also frequently given in the social hall of the college to the students and their friends, and every effort is made in the different homes with which they are connected to create an atmosphere which shall stimulate every womanly grace. The young ladies are from good families where they have been well-trained. Very few of them have any other aim than to be cultivated women in their own homes. They have come to college, not for the sake of a livelihood, but for intelligence. No effort has been made to attract any one class. The rich and poor are alike welcome, are on an equal footing, and are equally represented. Nor is the college intended, in any sense, to be a normal or professional school. Its social and intellectual advantages are far greater than if it were. Through its characteristic idea and composition, it is able to avoid those defects of manner and narrowness of thought which are almost unavoidable where either a specialty is early chosen or society is confined to those of exactly the same social condition.

Has our history thrown any light upon the expediency of separate colleges for women? I will not trespass upon your patience to-day by entering into any extended discussion of this much-vexed question.

Permit me simply to call your attention to a few significant facts. It is noteworthy that, notwithstanding the opening of so many male colleges to both sexes, and the confident predictions that others will soon follow their example, there has never been a period when such munificent bequests have been made to found female colleges, or when these colleges have been so largely patronized. In the three female colleges which have any reasonable claim to the title, there are to-day more young women pursuing a strictly collegiate course of study than in all the leading colleges and universities of equal rank where co-education is practiced. We were told a few years ago at Amherst, as they were told at Harvard and Yale, that, if women were only admitted, the buildings would soon be thronged with students; that scores were anxious for admission, and were ready to replenish any deficiency in college treasuries with their tuition fees. The arguments failed in most first-class eastern colleges. They were, however, in some cases successful. But where are the scores of students who were waiting for admission? They are at Vassar, Wellesley and Smith Colleges. In every single instance the male colleges have failed to draw the women to any extent, even when they have made special efforts to win them. The women prefer their own institutions, and so do the men; although to the latter there is little ground for complaint, for, as a young man naively remarked: "We have it so much our own way that the women make little difference." It is natural that some women, residing in a university town or city, should seek to improve the opportunities which the institution may offer to both sexes, for it materially alters the problem of co-education where the daughters of professors or others can attend college exercises and remain in their own homes. In Boston University I find, out of thirty-one female students in its collegiate course, all but six are from Boston or its immediate vicinity. In Wesleyan University there are only three young ladies, and they all belong to the families of its professors. In Colby University there are only ten young ladies, and five of these are from Waterville. In the University of Vermont there are only eleven young ladies, and these are either from Burlington or neighboring towns. In the University of Vermont and in Wesleyan University no young ladies have entered the Freshman class this year. I have been unable to obtain a catalogue of Bates College, but in the last report of the commissioner of education it is credited with only five young ladies, and I presume they are from Lewiston or its neighborhood. This completes the list of New England colleges where co-education is practiced. These facts seem sufficient to demonstrate that if separate colleges can be founded with intellectual advantages equal to those of male institutions, the great majority of women will prefer them. If compelled to choose between co-education and no education, a few will prefer the former.

There are also some facts which throw light upon the influence of co-education. They are not generally found in official reports. The girls behave so much better than the boys, prove such apt scholars, that it is not surprising they become favorite pupils, and are regarded as desirable acquisitions. The straws which indicate the current are seen in newspaper items, and in the undesigned admissions of the students themselves. Thus I read in a newspaper these words, omitting the proper names: "The citizens of ——were kept awake and tolerably well scared by a riotous demonstration in force by —— university students." That was a university where the elevating influence of woman was to put an end to disorderly conduct. Similar paragraphs occur frequently con-

cerning similar institutions. There is every indication that hazing, rowdyism, disorderly conduct, are just as prevalent where co-education is permitted as where it is not. I do not find that it has essentially improved the character of men. Has it changed woman's character? It is a delicate question to answer, and far be it from me to throw any reproach upon those who are seeking thus an education. It is frequently their only chance, and I honor their heroism for improving it. There are also facts to prove that woman's character has been wonderfully preserved and developed in adverse circumstances. Those who are able to remain at home may be also but little affected by the influences which operate most disastrously upon others. I have too much confidence in the virtue of our youth to believe that co-education has been or will be attended by many gross immoralities, although the possibility of such evils is attested by the recent grave disorders in a western university. The facts to which I would refer are simply illustrations of the natural tendency of the system.

Not long ago, I was reading a glowing account of the satisfactory working of co-education in a popular university. The writer was a lady, and the condition of things, as she described it, did seem almost heavenly. The young men did not notice the young women, nor the young women the young men. All were intent on study. After reading the description, one might imagine the students had become disembodied spirits, and had already entered the state where they neither marry nor are given in marriage. It so happened that shortly after, my attention was arrested by a newspaper account of the indignation of the male members of the Sophomore class of that same heavenly institution, because the female members had insisted upon their right to attend a class supper, which lasted till two o'clock in the morning. The young men did not think it exactly proper for a few young girls to be off with them in a strange hotel at that hour of the night. The girls saw no impropriety in it.

In a Chicago paper I find also a letter describing the happy working of co-education in another popular institution. The writer, in this case, was a gentleman, and he concludes by saying that the young ladies, when they first came to the university, were subject to some unpleasant restrictions. They were expected to receive their gentlemen friends in the common parlor. Now they have the same freedom that young men enjoy, and receive their friends in their own room without molestation. "For instance," he adds, "a bright young lady in the next room to mine is talking and laughing with four or five young fellows, and no one thinks it out of the way." A gentleman, also, who had just come from this university town, told me that the faculty were generally in favor of co-education, and thought it worked much better than they had anticipated. He said, however, after listening to some of their enthusiastic statements, he went out to take a walk and met one of the lady students, to whom he had been introduced as one of the brilliant scholars, returning with a male class-mate. They had been out alone together in the woods hunting. She carried the gun, and he the bag. It should be said, in behalf of the young lady, when the gentleman met them she blushed.

These are, it is true, trivial incidents, but they show very clearly the subtle changes which such a system naturally effects in the character of woman. These changes may be regarded as of little or no consequence. Some, I know, approve them. There is a class of reformers who would

obliterate, as far as possible, feminine characteristics. To many, however, there is no scientific knowledge which can compensate for the loss of feminine delicacy, or the lack of those graces and refinements of behavior which characterize a well-bred woman.

Some facts of human nature were well established before universities or colleges began. These facts no higher education will be likely to abolish or materially change. To most persons, whatever theorists may say, it will continue to seem neither wise nor prudent to send half a dozen or a score of girls, between the age of sixteen and twenty-two, away from home to live in all the familiarity of college life with two or three hundred young men. While human nature remains the same, and male colleges and universities preserve their essential characteristics, those parents who value good-breeding, delicacy and refinement, no less than learning, will prefer, if their daughters are to receive a collegiate education, that it should be in separate institutions.

"The best quality," says one of our scientific men, "noblest power and supreme beauty of the two sexes grow out of their dissimilarity, not out of their identity. Differentiation is nature's method of ascent. We should cultivate the difference in our sexes, not try to hide or abolish it." It is to give woman a fair chance to cultivate her own peculiar powers that we demand separate colleges for her, with equal intellectual advantages, and far greater opportunities for the culture of womanly characteristics. Princely gifts are rapidly responding to this demand. Separate colleges are being organized to give woman the intellectual and social advantages which she needs. As soon as they are opened they are rapidly filled. The day cannot be far distant when these colleges will possess all the appliances for a higher education equally with the best of those established for men. We cannot long consent that the road to knowledge should be so much harder for our daughters than for our sons.

Nor need we concern ourselves what will be done with these intelligent women. The difficulty is to know what to do with the ignorant ones. There is need enough of the highest intelligence in every sphere that woman may be called to fill. She needs it, that she may perfect the womanhood and mind which her Creator has bestowed upon her; that she may enjoy and apprehend Him who is the source and end of all human attainments. She needs it that she may give increased efficiency and dignity to all her avocations. In the quiet of her home life, where most women will continue to find their rightful scepter and brightest crown, she needs the same intelligence that she may train aright her children for the life that now is, and for that which is to come. In helping to mold public opinion through the ordinary channels of home and social life, if not through her pen or profession, she also needs all that an extensive and liberal culture can give. If she be so frequently the power behind the throne, the welfare of society and the State alike demand that her power be intelligent. Give woman the amplest knowledge which it is possible for her in the ordinary limitations of her earthly life to attain; the widest range of sympathies that the varied conditions of life can evoke; intensify and perfect at the same time every true womanly characteristic; and there is no work to which she may be called which will not be improved by her superior culture.

THE ESSENTIAL ELEMENTS OF A LIBERAL EDUCATION.

By Professor JOSEPH R. BUCHANAN, M. D., of the Eclectic Medical College
of New York city.

For about 2,000 years, the progress of science and philosophy was virtually arrested by a superstitious reverence for Greek literature. The dense ignorance of the age of Plato and Aristotle was crystallized into forms of thought, which, like a vast iceberg, covered the civilized world, until, in the time of Galileo, it began to thaw it in the divine light of science.

It is commonly supposed that this glacial period of fully twenty centuries has entirely passed away; that the ice is all dissolved, and that the light of divine love and wisdom, falling upon the soil with unobstructed warmth, is bringing forth the dense and rapid growth that insures a magnificent harvest; or, in plainer language, that we are fully emancipated from the influence of ancient ignorance, and are proceeding in the most direct and rational manner to cultivate and develop human intelligence, and to apply that intelligence to the acquisition of all attainable knowledge.

Disclaiming all intemperate radicalism, and all needless iconoclasm, I am, nevertheless, compelled by conceptions of the truth, derived from new and peculiar investigations, and also verified by experience in education, to maintain the opposite opinion—to declare that the iceberg is not yet entirely melted, but still exists as a benumbing power; for although Aristotle has been annihilated as an authority by Galileo, Newton, and the physiologists, the barbarian conceptions of education and of philosophy which came down from the Aristotelian age are still dominant in various degrees over the leading universities of the world; to so great an extent, indeed, that we shall not be able to boast of a true system of liberal education until the entire philosophy and ethics, teaching and influence of our leading institutions of Europe and America shall be thoroughly revolutionized; their leading conceptions being not only fundamentally changed, but absolutely *reversed*. If you will pardon the audacity of this language, I will endeavor to show that it is not extravagant.

There seems to be nothing in existence at present, on a large scale, in the leading institutions, which can properly be called a *liberal education*; for that which makes the most imposing claims to be recognized as liberal education in the universities appears, when viewed from the standpoint of anthropology, not only lame, feeble, and defective in the *most essential elements* of a liberal education, but positively illiberal in its contractile influence upon the intellect and soul, as well as in its degenerative influence upon the body.

The science of man demands a revolution in education, but the narrow limits of a paper before the Convocation do not admit an exposition of this demand or its basis, nor do they admit a distinct criticism of education as it is, or a distinct exposition of education as it should be. The fullest development our time admits of the philosophy of education will be but offering the synoptic head-lines of a chapter that is not yet written. I desire that these remarks may be accepted, not as a statement of the case, but as an *index* referring to the statement that may be made hereafter.

In presenting such a paper, I place myself at your mercy without a shield against misconception, and attribute to you the candor, patience, courtesy, liberality, and intuitive perception of truth, when nakedly presented, which would become a body of philosophers. If we need philosophers anywhere *especially*, it is among those who organize and control our systems and institutions of education.

The barbarian conception of education, which mankind have not yet outgrown, covering a period when science was absolutely scorned, is that education is the acquisition of a command of language and familiarity with literature, opinions and speculations. This is the fundamental conception, to which is added the knowledge of mathematics and of history. By the strenuous exertions of educational reformers, something has been added to this in modern times. The physical sciences have asserted their claims; ethics and sociology in the form of political economy are getting some recognition, and the spirit of progress, as you are all well aware, is making so many additional improvements in different institutions that it is difficult to make any exact estimate of the present status.

But all this is merely intellectual and chiefly literary. As an intellectual education it is defective, because it does not generally teach or impart that upon which the world's progress depends. It fails adequately to develop originality and power of independent thought; it fails to develop invention; it fails to overcome dogmatism and prejudice; it fails to develop liberality of thought; it fails to develop the power of reasoning upon testimony or evidence in reference to new truths, and all things indeed which are beyond the accustomed routine. The most educated men are often below the average of society in the ability to discard prejudice and to ascertain the existence of any truth foreign to their training.

Such education does not qualify men to lead society into new truths, new arts, and a better social condition. It is not so hopelessly repressive as the Chinese system, but it is negative, adding little to the onward and upward movement of society, and the profound scholar is sometimes up to the Chinese standard of immobility. It is notorious that hundreds of colleges, containing at least three-fourths of the learning, reputation and dignity of the medical profession, have not only closed their eyes against certain contemporary progress in medical science, refusing all examination of the scientific facts presented, but have assailed the new investigations with far more of partisan bitterness and malignity than was ever shown in a darker age by the partisans of Aristotle and Des Cartes. Does not every one know that this is true of the organized hostility against the scientific investigations and discoveries of homœopathy and American eclecticism, which captivate every individual physician who dares to investigate them, but which have never yet received an honest and courteous investigation, or even respectful treatment from the faculty of any old school college? A system of education which produces such results is a survival of barbarism, and is at war with the spirit of the nineteenth century.

But if all these barbarisms were removed by a radical change in our colleges, this would be but the beginning of reform. The whole system is wrong from top to bottom, for it is not EDUCATION, but only *schooling*. *Intellectual* training, however perfect we may make it, is not a *liberal education*. It is not an education at all, but only a fragment of education, as an arm is a portion of a man.

It is not even the moiety of an education, for a liberal education consists of five distinct departments, which may be compared to the five fingers of the hand. In selecting literary education or schooling as their sole purpose, the colleges have virtually chosen the little finger, leaving the four more useful and more powerful ones to blind chance, or perhaps to atrophy or paralysis. There has been many a learned collegian in whom four-fifths of his nature was undeveloped.

The five indispensable elements of a liberal education are these:

First and most necessary, physiological development; the formation of a manly, active, healthy constitution, competent to live a hundred years; competent to win success in life by unflagging energy; competent to enjoy life, and thus become a source of happiness to others, instead of a pauper or an invalid; competent to transmit life, health and joy to the thousands of future ages; competent to meet all the difficulties of life triumphantly, instead of struggling in misery, and railing at society and at Divine Providence.

Such are the men society needs, and if our colleges would look back 2,000 years, they would see how much better this education was conducted then. Instead of making men and women, the colleges have often impaired or destroyed them—broken them down so often that it has even been made an argument against education, and especially against the education of women, that education is dangerous to health.

Thus the educational systems of 2,000 years have, at last, culminated in this self-evident absurdity, that education is an injurious process; as if the very meaning of the word education had been forgotten. A grosser falsehood has never been current so long in civilized society. Education means development and growth of our powers and their organs, and *true* education is necessarily healthful and pleasant. A male or female school which does not develop its pupils, which does not send them home in better health and development than when it received them, ought to be abolished as a mistake, if not a nuisance. Such schools would never have existed but for the barbarous ideas of education maintained and propagated by the colleges, which train the little finger while the other four are tied up in helplessness.

This physiological destruction is utterly inexcusable even when physical training is impracticable, for *true intellectual education is not injurious to physical health, but beneficial* (and it were easy to prove this, if I had time); but a false system of intellectual training, which worries and fatigues the mind and injures the brain, does impair the health, because *it is not education*, but drudgery, mere tyranny and exhaustion, which are the reverse of education. *True* intellectual education is animating, joyous, and healthful; but such education is like angels' visits to the school-room, for the angels prefer to visit the Kindergarten and the Industrial Palace of M. Godin in France; and, I doubt not, they often visit Northampton, Vassar, and the other nurseries of young angels.

2. The second element of a liberal education is training for the business and duties of life—in other words, *Industrial Education*, without some share of which it were better for a man that he had never been born, for without industrial capacity (unless a hereditary capitalist), he must be a beggar, a thief, or a swindler. It is one of the greatest crimes of society that, in withholding industrial education from woman, it has forced upon her these alternatives, with the addition of legal and illegal prostitution. When we all confess our sins in this matter, some of us can plead to the recording angel that *our* medical colleges have always been

open to women, teaching them to be ministering angels of the chambers of suffering.

Colleges generally educate American citizens as if they were all the sons of wealthy noblemen, who needed only intellectual accomplishments. Silently but effectually they teach them to look on manual labor as something degrading; to speak with contempt of money and the arts by which it is honestly acquired; to aspire to professional life and to office-holding; and to glory in the military exploits of the crowned felons who have ravaged the homes of civilization with wholesale homicide and arson. It is little palliation that these things are not ostensibly and expressly taught, for the silent teaching is often the most effectual.

College education is thus largely demoralizing. The world is full of wrecks and failures from inefficiency, for which colleges are often responsible, and has been continually ravaged by wars in which the college taught have been leaders and instigators, instead of being conservative and moral influences to teach mankind their brotherhood. When the college knows nothing of universal brotherhood, and the church on which it leans also knows nothing of universal brotherhood, having its chaplains, deacons, bishops and members, fighting against each other in every war, what can we expect but the Satanic reign of national crime, desolation and misery, perpetuated by the national debt that crushes out the life of the laboring millions. We need true churches and true colleges whose walls are not stained with human blood, by which swords and cannon shall be turned into plowshares and anvils.

In neglecting physiological education we have degenerated the human race, impaired its efficiency, and saddled on its back a costly medical profession, ten times as many physicians as should be needed, who struggle to prolong lives that are hardly worth preserving, that perpetuate physical and moral degeneracy.

In neglecting industrial education, we produce a race of soft-handed, soft-muscled men, who struggle to escape man's first duty, *useful production*, and to live at others' expense by the innumerable methods of financial stratagem. The reign of fraud will never cease until each man is taught that life presents but this sharp alternative—useful production or the life of a vampire. He who has attained manhood without being trained to useful production, may justly utter maledictions against parents and schools for having blasted his life and deprived him of the only solid foundation of honor and prosperity.

Industrial education, giving the mastery of productive arts, is the second necessity, as the development of the body is the first. The college says,—if you *descend* to acquire an industrial education,—there is time enough *after* your literary education is completed, and therefore excludes industrial education, and builds up the man without certain necessary elements of manliness, as if the habits of twelve years of literary effeminacy would not cling through life. Would it be rational to confine a baby to the cradle for ten years on the pretext that it must first acquire language properly before it learns to walk. The child would be impaired for life, as men are impaired by any system which for many years separates practical from literary culture.

Under this semi-Chinese system intellect is trained to adorn effeminacy, pedantry and selfish ambitions, while the workshop and farm are surrendered to ignorance and blind routine. Invention lags behind necessity; the lands become worn out; the wheat field that ought to produce thirty bushels produces ten, and the work that *one* man ought to do ix

eight hours occupies three men twelve hours, and at the close of day they come to cheerless homes, where their wives are equally exhausted by toil. Thus labor is brutalized by ignorant toil, and classes are separated by broad, dividing lines which are premonitory of social convulsions, the end of which no one can foresee.

When industrial education shall have become universal, we shall not only have a more honest and manly and fraternal race, but our fields will be more than doubled in their production, and our arts advanced from two-fold to ten-fold in their product, and in the abundance thus produced poverty and pauperism will be submerged, as the desert of Sahara will be gone when the ocean flood is let in upon it.

Does any one doubt the practicability of this, I would say that it is an easy matter to make every young man and woman proficient in more than five profitable occupations, not only without detriment, but with positive benefit to their literary education. The progress of industrial education in Europe will ere long present a triumphant demonstration of this, and in this country the Massachusetts Institute of Technology and several other institutions are already giving the demonstration.

3. The third element of a liberal education, next in importance to the physical and industrial, is what I beg leave to call the *medical*. It has become a familiar thought that anatomy, physiology and hygiene are necessary elements of a liberal education, but I must claim much more.

The first duty of a man is to sustain himself, that he be not a burthen to others—that corresponds to industrial education. The second duty is akin to the first—physiological education. It is to sustain himself in full vigor of mind and body, that he may perform every duty and be a help instead of a burthen to those around him. Without this second duty performed, physiological development and industrial culture are both failures, and without either of these three indispensable qualifications—industrial, physiological and medical, the man himself may be a total failure. Therefore, these three are the first elements of a liberal education.

With physiological development and industrial qualifications, the medical education which I claim for him will enable him to live without failure in the performance of every duty, and the diffusion of a beneficial influence.

It is said that Col. Ingersoll recommended, as an improvement on the plans of Divine Providence, that health should be contagious instead of disease. I have demonstrated, and am daily demonstrating to my pupils and patients, that health is really contagious. The man who maintains high health is a fountain of health to all around him.

In speaking of health I am speaking of a moral duty. No man has a right to be drunk, and no man has a right to be sick. He gets sick (if not by poverty or exposure) either through profligacy or ignorance, and he has no right to be either profligate or ignorant, even if the college does train him up in ignorance of himself.

My demand for a medical education for all may seem extravagant when first heard, for it brings up infancy, a terrific array of surgery, obstetrics and death-bed consultations; but I mean nothing of that sort—I mean an education by which disease shall be stamped out in its incipience. I mean that disease should be treated as a mad dog, who is entirely harmless if you do not allow him to insert his teeth in your flesh. When you are trained to high health, you should resolve to live on that high plane inaccessible to disease. Its first approaches are easily repelled. The great majority of diseases can be repelled without the use of drugs.

Allow me, I pray, to speak *ex cathedra* as a medical professor, referring to what I am teaching to students and proving by experiment. If you will call at my office in the Eclectic Medical College, on Stuyvesant square, New York, I will prove what, at present, for want of time, I can only hint at. I will show you what I mean; how thoroughly men and women may be protected or saved from disease by methods almost unknown in the schools, and enabled to break up attacks of disease as soon as they are aware of its presence.

By such a medical education as I propose, nine-tenths of all the diseases that ravage society might be annihilated, and nine-tenths of all the physicians and medical schools granted a furlough for life.

One-half of the time that is usually expended on the Latin language would be sufficient for such a medical education as I propose for every man and every woman, but more especially for every woman, to whom it is far more valuable and necessary than rhetoric and grammar, arithmetic, geography, history, music, and languages.

With physical, industrial, and medical education, man is just prepared to live. But that his life shall be worth living, shall be a blessing to himself and the world, we need the fourth element of a liberal education which is to make him a good and happy man—the moral, or ethical, or religious education. Either of these words, *rightly understood*, conveys the full idea, for each should mean the same, although, contracted and perverted by vulgar usage, each word has but half its proper meaning. I mean the education which shall exalt man to the plane of a happy, a holy, and a glorious life, in harmony with the divine nature; a life so high that it shall be in communion with the angels; a life so beneficent that it shall diffuse happiness around to all, and leave a blessed fragrance behind in all the atmosphere that it filled.

Is this an idle dream of possibilities? I say it is not, for heaven is full of saints who have led such a life, and almost every one can recognize, if not within his reach at present, at least somewhere on the horizon of his life, some one who was born to bless by loving ways and deeds, and whose memory, as we look up to heaven, is a blessing like the falling dew.

Colleges are supposed to be devoted to intelligence, but I affirm that they should be devoted first to *virtue*; and that it is practicable to take the plasmic elements of youth and thereof make a good man, as it is to make an intelligent or wise one. Intellectual without moral education simply increases the dangerous and corrupting elements of society; it gives the scepter of knowledge to the social Lucifer.

Moral education I demand; but the word has an impoverished meaning: perhaps ethical is better, and *religious* is better still. But these words are so impoverished and enfeebled by the moral malaria of society that I would willingly drop them all, to say that I mean the education of the soul; the education that shall make it truly the temple of the living God.

What I mean by moral education; what are the new processes to be adopted; what glorious results it has realized, where it has to any extent been adopted, in converting young criminals into good citizens; and how thoroughly this disposes of all questions of college government and of prison discipline; still more how powerfully this moral education reinforces intellectual education, giving it a zeal, a fertility, and a power before unknown, time forbids me to say, and I can only refer to my published lecture on moral education, and to a book to be published on

"Full-orbed Education," the principles of which were received with great favor at the National Educational Association of 1875.

In conclusion, the four elements of a liberal education, in the order of their necessity, are the physical, the industrial, the medical, and the moral; all more necessary than the fifth—the literary or intellectual—which, as it has been conducted heretofore, I regard as the little finger of the educational hand. I would have it changed by developing the power of original thought and invention, until this feeble little finger shall become the index finger, to point the way to a new social condition of intelligence, prosperity, and happiness, in which the wisdom of the divine plan of humanity shall be illustrated by a heavenly life on earth.

If I am asked how colleges, which now give but one of the necessary elements of a liberal education, shall perform the miracle of giving the whole five in the same space, I reply that it requires no more *time* to exercise five fingers than to exercise one. The five elements of a liberal education intermingle, like inter-diffused gases, that aid each other's elasticity, and are helps, not hindrances to each other. Every new organ in the brain and body that is brought into play grows and develops at *the same time* as its associates, and adds to the sum of vital and spiritual power which sustains and impels the whole. I believe, therefore, that the most liberal education requires no more time than the fractional system, and that the first eighteen years of life are *amply* sufficient for a liberal education—the co-education of soul and body.

REGENTS' HIGHER EXAMINATIONS.

By Professor EDWARD NORTH, L. H. D., of Hamilton College.

Section 6, chapter 425 of the statutes of the State of New York for the year 1877, provides for the establishment of what may be called higher examinations. The section making this provision can be properly divided into two parts. The first part is mandatory, and has to do with academies and union schools. It enjoins upon the Regents the instituting of examinations which shall furnish and maintain a suitable standard of attainment for graduation from the academies and union schools, and for admission into the several colleges of the State.

After taking counsel of the colleges and academies, the Regents have already inaugurated this system of higher examinations, as the law provides. The certificates to be issued to successful candidates will relieve the college faculties of the necessity for a laborious duty hitherto unavoidable. These certificates ought to be accepted as a sufficient passport to any college in the State. No college will be asked to surrender any of its prerogatives, and no resistance need be anticipated to any arrangement legally organized by the Regents that promises to be so fruitful of good results.

Its manifest tendency, after correcting errors incident to a new system, will be to elevate the scholarship of the preparatory schools, to give them a prestige unknown to similar schools in other States, to strengthen the hands of thorough teachers, and to bring the requisites for admission to college to a fixed and uniform standard throughout the State.

The second part of section 6, chapter 425 of the statutes of 1877, is not mandatory, but permissive. Its provisions are so free from limitation that they call for serious deliberation on the part of this Convocation. Somewhat loosely phrased, it seems to authorize the Regents to establish examinations for degrees, or honorary testimonials, either in the colleges, or the academies, or wherever they see fit. All expenses incurred by establishing and conducting these examinations are to be paid by the State. The Regents are thus clothed with such largeness of liberty in a great educational experiment, that they naturally seek for suggestion and counsel from the institutions under their care.

What was the real purpose and aim of our law-makers in authorizing the Regents to inaugurate these higher examinations? This question is best answered by asking what was the aim and purpose of our law-makers in founding, ninety-four years ago, the University of the State of New York? In the carefully chosen words of the late Chancellor Pruyu: "The University is not an active institution for giving instruction, but an agency operating upon and through the colleges and academies which it charters, and over which it possesses a visitorial power."

As these higher examinations are to be organized and controlled by the Regents, it must have been the intention of our law-makers that the Regents should operate through the colleges and academies of the State, not that they should resort to the colleges and academies of other States, or build up private schools in our own State.

Even if permitted by the literal meaning of the statute, it cannot be supposed that the Regents would wish to build up and foster a system of private, independent schools, either within the State or without the

State, or that they would cherish and carry out plans clearly hostile to the character and prosperity of the institutions placed under their guardianship. Pursuing this course, the Board of Regents might be characterized as "a house divided against itself." Whatever system may be adopted, after mature deliberation, it will be a system that seeks to encourage large and thorough scholarship in the colleges and higher schools under the care of the Regents.

The Regents will not consciously introduce a needless element of jealousy and discord into the colleges under their care. They will rather aim to make this new test of attainment a new bond of union, and a new illustration of Cicero's familiar maxim, that "all the studies which contribute to a generous culture have a certain common vinculum."

Will not this danger be avoided most completely, and will not the proposed advantage be gained most surely by a post-graduate examination for the degrees of Doctor of Philosophy, Doctor of Philology, and possibly other degrees; the examination to be open to all graduates from the colleges that report to the Regents, and all teachers in the colleges and preparatory schools that report to the Regents?

This limitation would leave the door open to graduates of colleges in other States, provided they are connected as teachers with the colleges or preparatory schools that report to the Regents. This examination should not be a narrow competitive struggle for a first or second prize, in which only one or two can be successful, but a broad and generous field where all who pass a severe ordeal, whether one or one and twenty, shall be crowned with the university laurel.

Whatever the testimonial awarded, whether a prize or a diploma, it should be a certificate of absolute merit, and significant of most undoubted high attainments in scholarship or science. It should not be given to any one candidate simply because he is superior to another candidate, but because he has solved the test problems, and proved himself absolutely the master of his subject.

Three objections may be named to an undergraduate competitive examination for Regents' prizes:

1. It would disturb other competitions already established.
2. It would interfere with the regular work of the college. Students, who were preparing for the Regents' examination, would be apt to look upon one or more of the every-day class studies as of less importance, and would be out of harmony with the regular undergraduate course.
3. The effect of such an undergraduate competition might be to bring the colleges of the State into unprofitable antagonisms with each other. Discords might be engendered, where the common interest and dignity call for harmony and mutual good feeling. Let the Regents offer a pair of prizes, or a dozen pair of prizes, for twenty-three colleges to compete for, and if the offer was thought worthy of an effort, the natural course would be for each college to select the best man in a hundred and give him a special training for the arena, to the neglect of ninety-nine other students who are much more in need of special training. Such an inter-collegiate scramble for prizes would be unseemly, mischievous and discreditable to the Regents of the University of the State of New York.

A convenient time for this new examination would be during the week that precedes the annual Convocation, after the colleges and preparatory schools have held their anniversaries. Albany would be the place. All successful candidates should receive mileage and enough for other expenses, as provided by the statute. The examination committee

should make their reports to the Regents, and the conferring of degrees or testimonials by the Chancellor would give an additional interest to the Convocation, and would help to satisfy the prevailing idea of a State University.

These conclusions are most respectfully submitted to this Convocation:

1. That the Regents' examination for college entrance certificates has been wisely inaugurated, and should be heartily approved by the college faculties.
2. That the Regents will seem loyal to their position and trust as guardians of higher education, if they admit to the proposed examinations only those who represent the institutions under their care, either as graduates or teachers.
3. That the undergraduate competition for prizes should be left where it now is, to the several colleges of the State.

A REGENTS' UNIVERSITY CATALOGUE

By Professor EDWARD NORTH, L. H. D., of Hamilton College.

The University of the State of New York was founded by an act of the Legislature in 1784, the year next after the concluding of the treaty which acknowledged our nation's independence. We are rapidly approaching the hundredth anniversary of this unique organization, when the State and the world will be invited to a closer scrutiny of its aims, its efforts and its accomplished good. It is on record that the statute which gave birth to this University was drawn up by Alexander Hamilton, who added something of prophetic vision to the wisdom of a statesman. The University began its existence in a small way, unheralded, with the oversight of a single literary college, in the city of New York, when the entire population of the State was about 300,000. To-day it receives reports from 23 literary colleges and 234 academies, surrounded by a population of not less than 5,000,000. The Regents of the University are to be gratefully honored for what they have done to unify, to elevate and to vitalize that system of higher education which gives something of historic renown, and yet more of promise to the annals of the State of New York. If the closing of the first century of the University calls for any special commemoration, the Regents will not need to be reminded of their duty and their privilege. One of the collateral methods that may be chosen for signalizing the close of the century, will be the publishing of a Regents' University catalogue, that shall give a brief history of each of the colleges under its care, with a complete record of its officers, its endowments, its contributions to science, its graduates and all who have received its honorary diplomas. Heretofore each college has been left to tabulate its own work, and summarize its history in its chosen way—some in traditional Latin, some in vernacular idiom; some with fullness of detail, others with a bare assemblage of names and dates. These separate and perishable catalogues, each arranged after a different model, are not without much local interest and value. But they are unsatisfactory and often perplexing, if not positively exasperating, to one who would make a comparative conscientious study of college statistics, and clothe these dry bones with the sinews and muscles and arteries of living history. Published in unbound pamphlets, their historical value is seldom fully recognized. They are rarely collected and bound for preservation in our public libraries. A Regents' catalogue, carefully edited after some well-considered model, placing side by side the statistics of our several colleges, would have great historical value, and would punctuate with a befitting memorial the first century of the University of the State of New York. Such a catalogue might be so modeled as to have a manifold value. It might give in a single volume a compact statement of what each college has received in the shape of endowments and gifts, and what return it has made in the work of educating students, and in the increase and diffusion of useful knowledge, by giving the original residence and final occupation of each student, and the age of each of the deceased. Such a catalogue would help to a just estimate of the practical worth of undergraduate discipline, and its influence on the duration of life. It would also prepare the way for a hopeful renewal of the questions so often asked

and never yet satisfactorily answered: "To what extent is the State of New York the educator of its own sons and daughters?" "And what is needed to give to our own colleges a power of attraction for students that shall make New York as well in education as in commerce, agriculture, population and wealth, worthy to be named the Empire State?" When six years will bring us to the close of the first century of our State University, is it too early for this Convocation to suggest a Regents' Centennial catalogue?

UNIVERSITY NECROLOGY.

CHANCELLOR JOHN V. L. PRUYN, LL. D.

By Professor EDWARD NORTH, L. H. D.

The death of Chancellor Pruyn, in the fullness of his well-trained powers, was followed by impressive tributes to his personal worth and his official integrity and usefulness, from a great variety of organized bodies in Albany and elsewhere. Nowhere was his loss more deeply and tenderly felt than in the office of the University. His absence from this Convocation, where he presided for fourteen years, renews our common sorrow for the departure of a distinguished, great-hearted friend of education, whose busy life was a blessing not only to our State and nation, but to the larger republic of science and letters. Foreigners tell us that Americans know how to gather sudden riches, but that they fail in the art of spending wisely. This could not be said of Chancellor Pruyn. His liberal tastes and habits were not those of the reckless, unthoughtful spendthrift. He well understood the higher and finer ministries of wealth. He accepted worldly prosperity as a sacred trust. In his hands money was literally wealth, and was made to contribute to the weal of society. If it was true of Goldsmith that whatever he touched he embellished, it was equally true of Chancellor Pruyn that whatever he touched with the wand of his personal magnetism felt the influence of a quickening, uplifting power. As we recall the helpful words and deeds, the gracious courtesies and generosities of our departed friend, as we reverently study the record of his blameless years, we are filled with grateful admiration for his singular power of inspiring all about him with the love of honest, useful work; the love of whatever is best in science, letters and art; the love of whatever is purest and noblest in statesmanship, of whatever is sincere in friendship, in religion, in loyalty to truth. It is our comfort to know that such heroic lives are not ended when death comes. It is our comfort to know that the impress of his character is deeply stamped on this University, and that the inspiration of his life will attend us in days to come.

ISAAC W. JACKSON, LL. D., NOTT PROFESSOR OF MATHEMATICS IN UNION COLLEGE, DEPARTED THIS LIFE ON THE TWENTY-EIGHTH DAY OF JULY, 1877.

Memorial presented by ELIPHALET NOTT POTTER, D.D., LL.D., President of Union College.

From a quaint memorial of Isaac Jackson and his wife, the first of the family who settled in this country, we learn that previously they were resident in England and were respected members of the Society of Friends; and that they were about sixty years old when they decided to make America their home. They had been "under exercise and concern of mind" regarding the undertaking; since Isaac, inspired perhaps by the Scriptural imagery of the new earth and new heaven with the fair river and tree and healing leaves, in the Apocalypse, dreamed a dream of landing in the new world, of entering a beautiful vale through which, fed by a crystal spring, ran "a pleasant stream with hills of fair prospect on either hand." It is added that, at first a seeming wilderness, the vision changed and became the homestead of succeeding generations of his family. Thus influenced, he embarked and landed with his household on the eleventh of September, 1725, near New Garden, Pennsylvania. After relating his dream, he was directed by friends to an unoccupied tract near by, which to his wonder resembled closely the pleasant valley of his vision. Assisted by stalwart sons he soon established a comfortable homestead. His grandsons devoted a portion of the adjoining tract to a botanical garden, and a great-grandson further improved it by plantations of evergreens and deciduous trees now forming a somewhat noted grove. The garden ranked at that period among the first of its kind in the country. It is an interesting question for the student of heredity, how far we may attribute to a strain in the blood that taste for horticulture which resulted so happily for our college in the adornment of its garden, which, with vale and brook and hillside-spring, resembles so remarkably that of the ancestral dream.

Professor Jackson has left on record a brief but interesting estimate of the family as "honest, industrious, sufficiently enterprising, God-fearing, God-loving people, with very few 'Honorable' so-called among them and not a single millionaire; men and women discharging the providential responsibilities of their several stations in a manner satisfactory even to that good man who, in a community where all were honest, was commonly called by his friends and neighbors, honest William Jackson."

From this God-fearing, honest and sufficiently prosperous stock, was born at Cornwall, Orange county, in this State, on the twenty-eighth of August, in the year 1804, the son who received the old family name of Isaac and whom we have known as Professor Isaac W. Jackson. Both of his parents were members of the Society of Friends. The scenery of the neighborhood, which early made its impression upon him, was as beautiful and striking as that which had welcomed upon landing in America the forefather after whom he was named. In his childhood and during the long life of his honored mother, he was a faithful and devoted son. The talents which he manifested in his early youth induced his friends to send him from home, to secure the best advantages of academic education. He had a taste for mathematics and mechanics which was not

unusual in the family ; one of his uncles having invented a method in logarithms, while an old clock, bearing the family name and an early date, is still preserved, both as a memento of its maker and as an excellent time-piece. His interest and progress in his studies were such that after receiving the ordinary schooling of the vicinity he was sent in his seventeenth year to the Albany Academy.

"The first knowledge I had of my old friend," wrote Doctor Taylor Lewis,—"I may call him so, though a number of years my junior—was in the city of Albany in 1825. I was then a law-student, he a boy in the Academy. Two things drew to him more than the usual notice. One was his youthful Quaker coat, and the other the distinction of being, even at that time, a most superior mathematician. I must not omit a third fact that brought him—boy as he was—before the public eye. At that period, when Albany was an intensely federal city, there predominated in the Legislature a peculiar species of Democrats called Bucktails. The name is to be found in ancient newspaper files, though the variety itself has long since been extinct and fossilized. They had ventured upon the hazardous political stratagem of ejecting De Witt Clinton from the office of Canal Commissioner, although the very creator of the Canal policy. It was too much for our youthful mathematician, absorbed as he was in geometry and logarithms. He made the outrage the theme of his public academic exercise, and exposed the atrocious meanness of the transaction in a most 'scathing philippic,' as our sensational reporters say. The public prints took special notice of it. It became an exciting subject of conversation throughout the city ; and its stripling of an author, if I am not mistaken, was in some peril of being brought before the Senate on a 'question of privilege.' I mention the incident as showing what the indignant orator might have become, had he devoted himself to politics instead of the higher pursuits with which his intellectual life has been occupied."

Having completed his studies at the Academy with the highest honors, both in the classics and mathematics, he entered Union College, where he attained high standing in the classics and from which in 1826, in his twenty-second year, he graduated with the first honors in mathematics and chemistry. He was at once appointed a tutor in the college. Here, as at the Academy, it was evident that he possessed characteristics hardly compatible with the quiet spirit of the Friends. He became actively interested in military drill, and, having been chosen captain of the College Company, retained that position long after graduation. Alumni fond of praising the good old times remind us that the "Captain" received his commission from President Nott, in the summer of 1828, after unanimous election to the post by company A of the Union College Cadets ; and that he was promoted, receiving the title of major ; "but as no later title nor achievement of the first Napoleon could displace in the hearts of his soldiers that of 'The Little Corporal,' so, not that brilliant manœuvre which scaled the heights of Catskill under the fire of a July sun, nor the triumphant march upon Fort William Henry and ultimately to the gates of the Capitol could give our Major any prouder and dearer title with the 'boys,' than that of 'Captain.'" "Marshaling the classes for that well-ordered procession of Commencement, what a figure he used to make in those days ! Some remains of the Quaker style of dress still accompanying the military show, and the flourishing of the grand marshal's baton, gave it an appearance as picturesque as it was original." In his later years, Doctor Jackson pointed

often to the improved bodily vigor, carriage and manners of the students, as indicating the wisdom of the system of military drill and physical culture. He rejoiced towards the close of his life to see the system successfully revived, and he seconded cordially the efforts of the military officer detailed by the Government for this duty. He watched the erection of our large gymnasium with interest, since he held that the college cannot fulfill its duty without sending forth into the battle of life graduates trained in body as well as in mind. His garden was a source of health and prolonged life to him, and showed the advantage of exercise in the open air and of an interest outside the routine of a profession.

We may here recall the fact that during his collegiate course, with the coöperation of a band of congenial companions, some of whom have since attained to positions of eminent usefulness—among them Orlando Meads, LL.D., and Thomas Hun, M.D., LL.D.—he founded and maintained a society for social and literary purposes. In succeeding years, other like associations were formed; and hence Union College has been called the mother of the Greek-letter secret societies of the country. Doctor Jackson felt that the confidences of friendship, like the confidences of the family, though secret, may be none the less innocent; and the older he grew the more confident he became that a useful and salutary method had been devised by which college students might have such enjoyment as they desired, without violating the canons of morality or religion; the grave and the gay in temperament being mutually benefited, while the oldest college officer or graduate, as well as the youngest, might enter into close relations of friendship with undergraduates. In the stage of life most needing the cordial intimacy of elder friends as well as their cautions and counsels, our youth often lose these blessings through supposed lack of sympathy or because of artificial barriers. Professor Jackson hoped to remedy this evil by an association of younger and older members, both undergraduates and Alumni, who should be inspired by brotherly sentiments like those of home and church. Whatever be the counter-arguments and whether or not he builded in his youth better than he knew, such was the institution of the Greek-letter secret society in his conception of it; and as he believed, such was it to a great extent in its development. Hopeful and warm-hearted [sentiments, characteristic of the man, and which every member of such a society should strive to realize !

He was promoted to the Professorship of Mathematics in the year 1831. His section, comprising in accordance with our college system the rooms of the students under his more immediate charge, adjoined his residence or rather, by the construction of the building, formed part of it. He treated these students as responsible to himself mainly and like the members of his family. He had access to their rooms at all times of the day and night, and his visits were frequent and friendly. He would turn the point of ill-nature by a well-timed joke and meet serious wrong-doing with fatherly expostulation. Kind to the erring, he could crush vice relentlessly; and under the easy companionship which disarmed opposition, were the firmness and strength which gained the desired end. In his class-room, those were taught the topics of the text-book who desired to learn them; and those who desired besides to solve the abstruse problems of higher mathematics, found that his clear intellect elucidated each step of the most obscure processes.

Professor Foster states that when sent to "Captain Jackson" for his

entrance-examination in algebra, having given much more study to the classics than to mathematics, he found himself with several pairs of excited nerves in the august presence. The questions proposed were more comprehensive than numerous: What were the rules, and why were they thus? On this latter point the old school-book had been grandly reticent. Its readers should receive the rules as objects for faith and not for vain curiosity as to their source or the reasoning upon which they had been founded. The captain graciously considered these facts, admitted the plea based upon them in bar of adverse judgment, but accompanied the desired certificate with a gentle intimation that he regarded the recipient as not well grounded; as an unprincipled youth, in fact, who would do well at the earliest possible moment to make the acquaintance of some author who would condescend to give reasons for his rules. The advice was not given in vain.

When students were indisposed or unable to grasp the mathematical problems and principles of the text-book, it was seen that he was indeed no pedagogue, but an educator inspiring mental activity by indirect suggestion. He published books on trigonometry, optics, conic sections and mechanics, which were adopted in American colleges and in one important British institution; one of these works drawing from a competent authority the remark that he could not wish a single sentence changed; but in these productions Professor Jackson had no view to reputation; he based them on the observed needs of his classes, and designed them directly for their help. The obituary record of the Faculty well declares that, thoroughly conversant with that inductive method by the employment of which so large a portion of our knowledge has been obtained, he delighted in familiarizing his pupils with its principles and in illustrating its application to the discovery of new facts.

As an executive officer of the college he was prompt, energetic, ever-watchful and selecting his measures judiciously and pursuing them with discretion. The severity of his earlier conceptions of discipline was modified by the influence of one whom he loved and assisted most faithfully—the late President Nott—and whom he revered as “the majestic man, the first of college presidents, the true founder and guardian genius of this institution.” Whatever there may have been of severity and impetuosity in his nature, was at length mellowed through experience, inborn kindness and Christian charity, until at last nothing so marked the man as forbearance with youth, tender oversight and friendly counsel—traits which won from his students a regard ripening with years into abiding respect and love. Thus in presenting him with a beautiful token of esteem, a number of his former pupils took the occasion to say that “they cannot express their high appreciation of the great-hearted man whose long life of usefulness has been so filled with beauty, and whose unwavering kindness contributed so much to make their college days a joyful recollection.” He could be patient with the exuberance of youthful spirits and even with seeming disregard of his wishes and seeming disrespect toward himself. How many have testified to the long-suffering patience and encouraging counsel with which he sought to reclaim the erring!

In his family as well as in general intercourse, he was social and genial. Often in the evenings, coming out from his study to the drawing-room, he contributed his share of entertainment by reading aloud or by his cheerful and instructive conversation. When absent he wrote daily to those at home. He was watchful of the health and education

of his children. In my childhood, with an instinctive appreciation of his filial devotion, I have often watched him wheeling along the garden-chair which he had devised for the comfort of his aged mother, delighting in her enjoyment of the scene and pointing out the beauties of flower-bed, lawn or grove, which he kept and dressed with unceasing care.

He was always neatly and simply attired ; slight in form, well built and active, with clear, piercing eye looking out from under a large and prominent brow ; his head finely developed ; his voice frank and friendly as he welcomed one to his study and garden. And that garden played no small part in extending the reputation and influence of the college. It is said that before the present excellent equipment in apparatus for the several departments was acquired, President Nott used to invite the inquiring visitor to call on Professor Jackson and to walk through the garden ; thus, not only producing a pleasant general impression of the college, but emphasizing the beauty, healthfulness and capabilities of its situation. The cordial reception given by Professor Jackson but exemplified the spirit of hospitality for which the college was distinguished.

His household gave ample proof of the presence of an efficient, cultured helpmeet. It was the prized resort of a large and cultivated circle of relatives and friends from abroad. During Commencement week especially, "open house" was kept, and students and returning graduates found a hearty welcome. The importance of such hospitality in attracting youth to the institution, and in moulding and refining student life — especially with that controlling portion of the public who value the amenities of society — cannot be over-estimated. No matter what may be one's intellectual gifts and efforts, he suffers great disadvantages in the race of life without some share of these graces. We may well hold, with Bacon, in his *Advancement of Learning*, that while behavior or "the wisdom of conversation ought not to be overmuch affected, much less ought it to be despised ; for it hath not only honor in itself but an influence also with business and government. The poet saith, *Nec vultu destrue verba tua.* A man may destroy the force of his words with his countenance ; so may he of his deeds. Saith Cicero recommending to his brother affability and easy access, *Nil interest habere ostiam apertam, vultum clausum.* And if the government of the countenance be of such effect, much more is that of speech and other carriage appertaining to conversation ; the true model whereof seemeth to me well expressed by Livy, though not meant for his purpose : *Ne aut arrogans videar, aut obnoxius ; quorum alterum est aliena libertatis oblii, alterum suæ.*"

Doctor Jackson's table was noted, if for its simplicity, yet also for its excellence, as Professor Lewis reminded us in his reminiscences at the semi-centennial celebration ; and many another favored friend has remembered the college through the same pleasant association. He coöperated with those sensible and philanthropic men and women who are striving to popularize economical, healthful and palatable cookery. He often purchased the works and tested the methods of those who seek so to educate poor and rich alike, that the dinner, whether of herbs or of the stalled ox, may have good digestion, health and content therewith.

The salaries of collegiate professors are often declared to be too small to permit their enjoyment of the elegancies or even of the comforts of

[CONVOCATION, SIG. 8.]

life, and the pleasures of charity to the needy. But although Professor Jackson's means were very limited, his home, as we have seen, was a model of hospitality, and his charities, although at the cost of self-denial, were abundant. He indulged also for "our four-footed friends"—the comfortable old horse, the graceful hound, and other animals dear to his domestic circle—a care that would have satisfied the heart of their public champion, Mr. Bergh. In addition to these objects, he contributed from his own means toward the maintenance of his beloved garden, expending on its construction and embellishment—as he stated privately a short time before his decease—from first to last a sum of about \$10,000. On commencing his residence in the college building, he found a few beds of poor flowers or vegetables, and adjoining them a rude, tangled vale. He left a garden well-ordered, widely extended, filled with select plants, shrubs and flowers; the long, shady rambles and sun-lit glades of which became one of the most attractive possessions of the college. He cultivated over 300 varieties of roses, corresponded and exchanged with the best horticulturists of England and America, improved many species and distributed far and wide the new seeds, thus laying this State especially under obligations in ways not recognized. A household and its surroundings managed thus shows what a good heart, clear judgment and diligent hand can accomplish with limited means; and it further shows that in the exemption from extravagant expenditures, in the regularity of even a slender stipend, in the comparative permanence and the social influence of our professorial positions, and in the opportunities for culture and usefulness, there are compensations which may well attract the best character and talent of the times.

It is needless here to say that the science and art of horticulture were a delight and solace of the professor's life. Valuable works on this subject make up a large part of his library. His affection for his shrubs and flowers was like that manifested by Darwin in his quaint poem on the "Loves of the Plants;" new varieties grew as if by magic beneath his hands. The bowers and walks of his creation became familiar haunts, lit up by the joyous presence of youths and maidens and troops of children, while often the old came halting back to revive once more the memories and emotions of other days. These grounds having been committed to his care, and improved and extended during a long period by his own hand, he learned with pleasure, in the last year of his life, that a fund had been projected for continuing his work. He could receive no more appropriate memorial tribute.

His life centred in and was mainly bounded by his College. It was passed in his family circle, his study, his class-room or with members of the Faculty. He avoided occasions of personal prominence. When the degree of Doctor of Laws was conferred upon him by Hobart College, his modesty led him to hesitate before accepting it. In social intercourse he considerately turned the conversation toward the interests of others rather than his own, drawing them out pleasantly and speaking of subjects which they could discuss to advantage. He always expressed himself with clearness and simplicity and often with elegance. While he wrote readily, he reviewed his diction carefully and altered and polished it until acceptable to his critical taste. His diary, his study, his household and all his affairs, whether relatively great or small, show that he was determined to do whatever he attempted, as well as he could. His intellectual concentration and perseverance were such that

he could not rest satisfied until he had completed what he had deliberately undertaken. Conscientious and regular in his attendance upon public worship, yet as to his personal feelings and meditations upon religion and kindred topics, he was characterized by a Quaker-like reticence, which, however, never prevented him at the critical moment from speaking and acting boldly for the right. He was always sympathetic, especially so with the sorrowing and the needy. Professor Henry, of the Smithsonian Institute, an honorary Alumnus of Union College, who was his fellow-student in boyhood and his life-long correspondent, said that he was "the truest and most generous soul he ever knew." His charities were from the heart as well as from the hand, and he concealed their objects and extent. A nervous system extremely sensitive to physical pain and moral excitements might cause at times a certain irritability or impatience of manner, but the soul, the true man, was patient and forbearing, even to tenderness. More than most men of his time, he possessed a trait which, a thoughtful observer has remarked, is, of all the moral qualities, the one becoming most rare—childlikeness, genuine simplicity and a modest fearlessness, such as Goldsmith and Wordsworth sometimes manifested, such as Hans Christian Andersen possessed to a fault, and Ruskin has at times evinced as a mild radiance relieving periods of storm and change. Doctor Jackson felt, with Doctor Lewis, that the humble faith of some childlike believer elucidates at times the meaning of God's word more clearly than the learning of the undevout scholar. In his case, as in that of his friend Doctor Lewis, to a life of good works was joined a life of simple, Christian faith. He had no sympathy with that scientific pharisaism which, in the search after impossible certainty, reaches the creed of universal nihilism; nor with such boasting positivism as that which forbids belief in anything we cannot see or feel or fathom, like a blind prisoner beating his body against the cold walls and bars of his narrow cell, and calling out madly, Only the tangible exists; only that which I feel or handle or comprehend is positive; faith is a falsehood; beyond the limits of my narrow cell there is nothing, no orbs of light, no nobler modes of life, no spiritual truths, no immortality, no Heaven, no God!

Fulfilling the duties of his position ably, faithfully, contentedly, no achievements of wealth or fame could have brought him wider usefulness or higher happiness; for thousands of the educated men of the country attest their gratitude for his aid in the development of mind and character.

No less noticeable was his high appreciation of order and beauty in the natural and in the moral world, his discriminating delight in the best literature, ancient and modern, his love of justice, and his sympathy with the oppressed. Doctor Jackson's view of life in the retrospect was like that so strikingly expressed by the Rt. Honorable Mr. Gladstone, in his letter regretting his inability to address Union University as its Honorary Chancellor: "I have but one complaint to make: life is too full, time too rapid; which in truth means that the provision divinely made for our exercise and growth is too bounteous. But it produces a relative penury of power to do the duties that are waiting and crying out to be done."

The civil war roused his patriotic heart to the highest enthusiasm. Like his ancestors, who had suffered loss of all things for conscience' sake, possessing the courage of his convictions, he manifested an impetuous fervor of attack upon whatever excited righteous indignation. His

sense of honor and his moral rectitude made him impatient of false assumption and indignant at persistence in oppression and wrong. He was always an open foe, notwithstanding his opponent to his face. He cordially approved of the enlistment of his son William, a man of rare ability, presence and personal magnetism; and when, a sacrifice to his country's cause, his loved remains were brought home, Doctor Jackson received them with unmurmuring submission and followed them to the grave with Christian resignation. In no conventional sense, but with the true spirit of patriotic devotion, he traced as the inscription for the granite monument of his son words familiar but immortal, at once classical in language and Christ-like in sentiment of self-sacrifice :

Dulce et decorum est pro patria mori.

At the close of the war for the Union, while the country at the north was prosperous, Union College was felt to be in a critical condition, declining steadily during many years in prestige, influence and numbers. Doctor Jackson was among the first to comprehend the situation. The institution having depended for more than half a century for its endowment and success upon one man of exceptional genius, it was requisite for its future usefulness that it should no longer be dependent upon any one alone, but that a broader foundation should be sought in the sympathy, influence and watchful care of its Alumni and of all others naturally interested in its well-being. Having been founded upon the principles of Christian unity, Union College, lacking denominational support, had claims upon the yet broader patronage of all desiring the fulfillment of our Lord's high-priestly prayer for unity; and might also turn hopefully to the great number of influential and successful men in all parts of the land to whom she had given efficient practical as well as literary training. Professor Jackson therefore sent forth ringing appeals to the graduates to organize local Alumni Associations. Not content with circulars or stereotyped forms of address, he wrote with his own hand letter upon letter, studying the character of all who had been his pupils, seeking how most effectually to move each one of them and resting not, day nor night, until hearty affirmative responses poured in from all quarters. On the memorable evening of April 27th, 1869, telegraphic greetings flew to Union College from New York and the principal cities of the State, and from the east and west and south, laden with the cordial expressions of the Alumni gathered at their banquets. They abounded in the warmest expressions of devotion to Alma Mater and to Professor Jackson, her representative on the occasion. The excellence of the addresses, the eminence of the speakers, the character of the representative Alumni, the simultaneous outburst of loyalty, made the movement as conspicuously useful and admirable as it was unparalleled. But unfortunately, it was believed at the same time and widely proclaimed that the college was richer than any of her children and needed no aid but their sympathy and influence. The fever of development of real estate following the war ran high. The trust in land provided by Doctor Nott was considered of vast value if only held for further improvements and rise in prices. Thus the moment for immediate profitable sale or lease slipped by; the high tide in the liberal endowment of educational institutions needing and making known their needs, also slipped by without the requisite effort for this college. It was not long before this mistake began to be felt. Doctor Jackson lived to see with deep anxiety

the depreciation of the unproductive and heavily assessed estate which chiefly composed the property of the institution.

When I was invited to take the presidency of the college, Doctor Jackson urged my acceptance as a duty. After several interviews it was arranged that, devolving upon its efficient faculty much connected with the ordinary routine of the college, the in-coming president should carry forward undertakings long since begun; such as the increase of the library, the completion of the Alumni Hall, the provision of special facilities for the several departments together with the increase of the means for general culture. But the yearly support of the college; the increase of its regular income to meet proper salaries and other usual expenditures; provision against deficiencies until the real estate investments could be improved; and endowments for general and ordinary purposes; this was rightly the broad field for the efforts of trustees, Alumni, Faculty, citizens and friends of Christian unity and of education. Professor Jackson was convinced, and the history of colleges shows his sagacity, that the continuous power of such corporations depends upon the efforts of the many as well as the devotion of a few, upon all friends interested in education and especially upon the Alumni. Knowing that while the individual dies institutions survive, he sought for the College a life not individual or circumscribed but widely expanded. He was willing to work and wait for such a day. The College would thus gain a responsible, perpetual constituency, active for its honor, its usefulness and its progress.

Doctor Jackson saw with gratitide more than \$300,000 secured, mainly toward those objects—buildings, library and scholarships—to which the efforts of the president had been directed; he knew this sum to exceed in amount all our educational funds or trusts acquired during the previous three-quarters of a century, except the Nott Trust now yielding but little for college purposes. That sum, however, was not larger than the outlay in a single year of some of our prominent competitors. Meanwhile, this institution had no share in the congressional land-grants; and the many new colleges and universities were dividing college patronage and adding costly attractions. Doctor Jackson therefore earnestly desired the furtherance of the definite, though not inflexible, plan by which it was hoped to maintain Union in its just position among its peers. The incorporation in 1876 of Union University—the idea of which had long slumbered in our charter—was a portion of that plan. He wrote of it in the first University catalogue: “Union college acquired, by its charter, full university powers; but the creation of post-graduate institutions at Schenectady had not been found practicable. Schools of Law and Medicine and also an Astronomical Observatory had long existed at Albany, the distance between which city and Schenectady, estimated in time, is less than that which in many cases separates the professional schools from the other departments of a university. The arrangement naturally suggested by these circumstances was that the professional schools and the Observatory at Albany should be united with Union College. The union of the several institutions—although each will continue to hold its own rights, properties and trusts as heretofore—was consummated by the incorporation, for university purposes, of Union University.”

Doctor Jackson learned with approval that the resources at command would be henceforth devoted to the educational departments. He saw with satisfaction the raising of the standard of scholarship and the actual improvement under it, and a total increase in numbers despite

losses through greater rigor of examinations. He concurred in discouraging the prevalent tendency to luxury and extravagance which, alien to the spirit of our national institutions and to the college usages of earlier times, has never found a place at Union; a tendency which threatens to injure the sons of the rich, and to exclude or mortify the sons of the poor. He would have seen their college days characterized by simple habits and by enthusiasm for educational rather than social objects.

If we admit with Lord Chatham that confidence is a plant of slow growth, and with Doctor Jackson that, after the "trials of the last quarter-century, those laboring for the college have before them an arduous task," yet with him we have faith in her motto, "*Perseverantia vincit*;" and we believe that her trials were designed to disclose alike her needs and her resources, so that upon the broader foundation may stand the superstructure of enduring success.

Doctor Jackson had been deeply interested in the war for the union, but when at its close he longed for peace and for the cessation of all sectional animosities, he thought it a most happy omen that among the first considerable endowments secured was one designed mainly (though not exclusively) for the benefit of students from the southern States, and meeting many of the expenses incident to their residence at college; at the same time bringing the North and the South into friendly contact, and thus perpetuating the influence of one who loved both national and Christian unity. I allude to the John David Wolfe Scholarships Foundation of \$50,000, the gift of filial affection in memory of one of New York's most benevolent merchant princes.

The culmination of Doctor Jackson's career was in 1876, at the semi-centennial anniversary of his connection with the college. Can we forget the scene—the hundreds of graduates gathering from all parts of the land; the Memorial Hall ringing with cheers of welcome and with his praises; his modesty at the banquet of the Alumni, of which he was the honored guest; and how, on the Commencement morning, his dear friend, Doctor Lewis, spoke as the old man eloquent to the old man grand and true? Recalling his acquaintance with him in his youth as inspiring an admiration which deepened into the friendship of a lifetime, Doctor Lewis' voice grew strong and clear as he said: "He has lived a most useful and honorable life. It must have been a happy one. To say nothing here of that all-transcending element of the Divine grace, in which, I trust, he has been a sharer, he has had a clear mind constantly gazing upon the science of certainty, as it may be called, in contrast with the dimness and doubt and shadow that rest upon almost all the provinces of human thought. To this has been added the most charming of outward pursuits. I refer to his cultivation, for so many years, of that beautiful garden we are all so fond of visiting. It must have been a happy life. Surely may we congratulate him on having possessed two such elements of physical and intellectual serenity. His life belongs to the past, and has nothing to fear for the future. Of the love of his classes he is sure. The warm esteem of every one who has ever sat under his teaching, the unfeigned respect of all who have ever been his colleagues, this is his literary inheritance as long as Union College holds a place among the institutions of our land, and may that be as long as our land holds its place among the nations of the earth!" As Doctor Lewis ceased, Doctor Jackson, rising from his seat beside him, acknowledged with the warm grasp of his hand the loving greeting

of his old friend and coadjutor. Thus, lovely and pleasant in their lives, it was fitting that in death they should not be divided.

What changes in history, letters, society and in the institutions and industries of this country, and in the material, educational and religious interests of the world at large occurred during the span of this one life, which, just as he became conscious of failing powers, ebbed tranquilly away in sleep!

It was in the bright sunlight of a summer afternoon, in the Garden, which, by his care, had just reached its most perfect condition, and under the great elm which he loved, that his friends gathered for funeral rites befitting the departed. It is a usage of the Moravian Church—with which those of us who are descendants of Friends sympathize—to banish tokens of heathenish despair from their burial service, that all things may betoken the joy and peace of the Christian entering into the reward of his Lord. And thus, as our honored friend would have wished, without ostentatious display, his bier borne by the College workmen and surrounded by his-life long and loved associates, with bloom and brightness and Christian hope, and the peace that passeth understanding breathed in the very atmosphere of that fair and tranquil afternoon, was the appropriate service said by his pupil and his friend, close beside the home of his wedded life. Before the stars, as silent guardians, had appeared, and while the sun still hung resplendent above the horizon, the long procession having reached the portion of the College cemetery, beautified by his reverent care, the last rites were said, the grave was closed and flowers of his own rearing covered it.

PROFESSOR ORAN W. MORRIS, M. D.

By Professor DANIEL S. MARTIN, A. M.

When a good man goes home, leaving behind him a long life-work faithfully done, the fragrance of a true and noble character, and a record of years full of interesting memories of the past, it is well for those of us who are still busy in the world to pause for a little, and, in the language of the ancient psalmist, to "mark the perfect man, and behold the upright, for the end of that man is peace."

It was my privilege to know, during some years past, the late Dr. Morris, of New York, and doubtless there are many, or at least some, present in this Convocation who recall his frequent attendance at our annual sessions. He was not a man who sought or won the prizes that this world holds dear,—of fame, position, or wealth. He had simpler tastes; he pursued higher aims; and he now has a nobler reward. With the energy of an active and tireless man, he united the gladness and simplicity of a child, and the dignity of a servant of the Most High.

Dr. Morris was long and prominently connected with the instruction of the deaf and dumb, and during the last eight years of his life was the librarian of the Cooper Union in the city of New York.

Oran Wilkinson Morris was born at Ames, Montgomery county, in this State, in February, 1798, and so, at the time of his death, which occurred on the ninth of August last, he had attained nearly to the age of four-score. He was a lineal descendant of Richard Morris, who emigrated to this country from England, in company with John Winthrop, in 1630, and who, during the remainder of the seventeenth century, held various offices of trust and honor in the colony of Massachusetts.

At the age of seventeen, young Morris went from his father's farm to study at the Albany Academy. Here he passed the years from 1815 to 1818, standing very high in his class, and studying with enthusiasm in preparing for college. But that cherished hope was destined to fail, through the limited means of his family. Instead, therefore, of entering upon a collegiate education, he was compelled to pass from the academy into the work of teaching in country schools, boarding here and there among the patrons, in the manner of that day. Thus passed ten years of his early life, during which, however, he was studying as well as teaching, and so gaining preparation for the wider field that now opened before him.

In 1829 the enthusiastic and faithful teacher received the appointment of principal of the "Central Asylum for the Deaf and Dumb," established at Bowman's Creek (now called Buel), near the place of his birth, in Montgomery county. Four years later, this asylum was consolidated by the State with the "New York Institution for the Deaf and Dumb," in the upper part of New York city. Hither Dr. Morris now moved with his family, to enter upon the chief work of his life as a professor in that justly celebrated institution, remaining there until 1869, with the exception of two years spent at Knoxville, Tennessee, in organizing a similar institution for that State. Nearly forty years of his life were thus given to the work of instruction in behalf of that unfortunate class who are so largely shut off, by natural defects, from the sources of human

knowledge. Nor was he in any sense a routine worker. Though thoroughly familiar with the language of signs, he was yet among the first in this country to advocate and introduce the new and far better method of teaching articulation to the dumb. Multitudes of this unhappy class have, by his untiring and unostentatious labors, been lifted from mental darkness and brought into the light of knowledge and christianity.

In 1869 he left the Institution for the Deaf and Dumb, and became librarian of the Cooper Union Free Library, a position in which he was brought into contact with thousands of persons of every class, and for which his sincerity, interest, and uniform kindness and courtesy rendered him eminently fitted.

In the spring of 1877, his health began seriously to fail, and the trustees of the Cooper Union granted him leave of absence for a time, during which it was hoped that he would regain his powers. He was himself most anxious to return to his work in the library; but it was not so to be. Spring passed, and summer came, only to bring increasing feebleness. To the last he sought to go out on the Sabbath, to conduct his Young Ladies' Bible Class, in the Twenty-third Street Presbyterian Church; but this, too, had finally to be laid aside, and ere long, surrounded by the loving attentions of his children and grand-daughter, he quietly passed away.

There are many interesting circumstances in the life of Dr. Morris which I would gladly refer to, did time permit, but there are some aspects in particular that ought to be mentioned here. One of these is his love for science and his large acquaintance therewith, gained and cultivated in the midst of constant and laborious engagements. In this respect, Dr. Morris may well serve as a model for busy teachers, and an encouragement to them to pursue his path. In botany, mineralogy, conchology, numismatics, and above all meteorology, he was an enthusiast. Botany was his first love; and he never, to the end of life, lost his affection for it, which showed itself afresh on every occasion which brought him into contact with plants and flowers. These tastes were awakened during his school-days in this city, through the influence of that eminent man, the late Prof. Eaton, who seems to have had the power of making so deep an impression on the minds of those who knew him. Prof. Eaton gave lectures in this building, which young Morris attended; and his early diary is full of references to them and of accounts of his botanical rambles over the hills and around the pleasant environs of this city. Day after day, in 1818, we have his memoranda of such jaunts, "over the river," "to Norman's Kill," "to Buttermilk Falls," Cohoes, Lansingburg, etc.; and then, "in the evening, went to the Capitol to hear Professor Eaton."

Among these, and many similar, entries in this early diary, are others which have a political and historical interest, especially for the citizens of Albany. On the Fourth of July, 1818, he describes the observance of the day by a remarkable pageant, in honor of the remains of General Montgomery, then on their way from Quebec to New York, and passing through this city just at our national anniversary. He speaks of watching the procession, "the finest," he adds, "that I have ever seen," as it started from the Capitol and moved down State street toward the boat. In like manner, several years later, during his life as a school teacher, he gives an interesting sketch of the semi-centennial celebration

of the surrender of Burgoyne, held at Saratoga, and attended by quite a number of the surviving soldiers of Gen. Gates's army.

His early love for science never faded, and it gave a marked coloring to much of his later life. In New York, he became an active and valued member of the Lyceum of Natural History (now the Academy of Sciences), and also of the American Geographical Society, the New York Historical Society, and the Torrey Botanical Club. In all such associations he was loved and respected by his fellow-members; and with Professor Torrey in particular—the botanist, the instructor, and the Christian—he had, as may be imagined, peculiar sympathies.

In meteorology, which he took up some years later than botany, he attained more of actual prominence. Here, too, a natural love for the clouds, the sky, the rainbow, and the storm, formed the basis for the pursuit of this study. He became the meteorological observer in New York city for the Smithsonian Institution, from the time that its system of such observations was first organized; and he continued such until nearly the time of his death. In this work of observing, studying, and collating the observations upon temperature, pressure, wind, humidity—upon meteors, haloes, auroras—he was perfectly enthusiastic; and his records, kept for nearly half a century, are the only complete ones preserved in the city of New York.

Doctor Morris was a lover of nature in her every form; he was also a "lover o' good men," and of good works. Rarely, even to his latest years, would he come home in the summer without some plant or flower that he had found. In every assemblage of cultured and benevolent men, too, his frank, serious, kindly face was almost sure to be seen. In the church of Christ, he was for many years an elder and a Bible-class teacher. Such a man may become aged, but he can never grow old; for his spirit possesses the secrets of unfading youth. And so, though he had passed the ordinary limit assigned to human life, and was approaching four-score years, yet his strength was not "labor and sorrow," but sunshine and peace. Rich in the memories of a life spent in humble, hearty, and faithful labor for others' good; rich in mental culture and in domestic affection; richest of all in the hope of a heavenly inheritance through the grace of his Redeemer—Dr. Morris left this world. Rarely has a more simple, unselfish, and cheerful character passed away from among us.

PROFESSOR CHARLES FREDERICK HARTT, A. M.

By Professor DANIEL S. MARTIN, A. M.

It is with feelings of the profoundest sorrow that the present writer undertakes the sad, and yet grateful, service of preparing a memorial of his friend and co-laborer in science, Professor Charles F. Hartt. Among the many good and able and faithful men, whose names have been recorded with honor in the necrology of this Convocation during the years past, there are yet not many who have possessed a reputation and an influence reaching beyond our own country, and forth into that great world of science and literature that knows no bounds of nationality or race. But such a one truly was our lamented friend. A Canadian by birth and education; an American by residence and adoption; a Brazilian, I may almost say, by the chief labors and discoveries of his riper years; a scientist always and everywhere;—he was no common man, and in his sad, and, as we cannot but feel, untimely death, the science of two continents is called to mourn for one who cannot be replaced.

It is now five years since Professor Hartt was with us in this Convocation, as a representative from Cornell University. On that occasion he read before us one of his most striking and characteristic papers, that on "Evolution in Ornament, or the Beginnings of Art," wherein his powers, both of close observation and of philosophic thought, were very clearly shown, as he drew forth broad principles of the early development of aesthetic taste, from the rude pottery of the South American Indian races, both living and extinct. About a year later, it was the writer's privilege to accompany him to the steamer and bid him farewell as he went from our shores to his last and greatest work in the survey of the Empire of Brazil. Little did we think that that noble work was so soon and so sadly to close.

For much of the record of his earlier years I am indebted to two gentlemen,—friends, students and co-laborers of Professor Hartt,—Mr. Richard Rathbun and Professor Theodore B. Comstock, the former of whom was associated with him in much of his foreign work, and the latter was charged, during his absence, with the duties of his professorship at Cornell.

Charles Frederick Hartt was born at Frederickton, New Brunswick, in 1840, and at the time of his death was therefore in the prime of early manhood. He grew up in the province of Nova Scotia, and was educated at Horton Academy, at Wolfsboro, where he prepared for his collegiate course at Acadia College, whence he graduated honorably in 1860. His love for natural history appeared very early, and attracted attention and encouragement from some of his teachers when he was but ten years old. During his course at Acadia College, he did excellent geological work, traveling through Nova Scotia on foot from one end to the other, and making large collections under the guidance of Dr. J. W. Dawson, now of McGill University at Montreal.

After his graduation, he went with his father to St. John, New Brunswick, to open a classical high school. Here he found a new geological field, and lost no time in entering thereupon. Near the city of St. John are the celebrated "Fern Ledges," which lie between high and

low tides, on the shore of the Bay of Fundy, and are quite difficult of access. But he speedily did important work therein, obtaining large numbers of plants and insects of Devonian age, which were described mainly by Dr. Dawson. This remarkable discovery of the oldest insects and almost the oldest plants even yet known to geology, brought the young explorer to the notice of Professor Agassiz, who invited him to Cambridge in 1861, as a special student in the museum of comparative zoölogy. Accepting this proposal, Mr. Hartt studied with great success for three years at Cambridge, spending his vacations partly in continued explorations in New Brunswick, and partly in lecturing for his own support. During this time he received a position upon the geological survey of New Brunswick, and now added to his previous discoveries the recognition of the Primordial group in that province, in connection with Professor G. F. Matthew.

In 1865, Professor Agassiz left this country on the Thayer expedition to Brazil, and Mr. Hartt accompanied the party as geologist. On this trip he explored the coast, studied the reefs, and ascended the streams along the shore of Brazil from Rio Janeiro to Bahia. The report of his extended labors, collections, and studies, at this time, was not published until several years later, when it had grown into the large and important volume entitled "The Physical Geography and Geology of Brazil."

Two years later, in 1867, he undertook his second journey to South America, and explored the region of the Abrolhos Islands, making, as usual, extensive collections. On returning to the United States, he lectured for some time in and around New York city, laboring actively for his support. He was connected in this way with numerous schools and seminaries, among them Rutgers Institute (just previous to its organization as Rutgers Female College), Pelham Priory, near New Rochelle, and the Cooper Union. At this time he was chosen to the professorship of natural history in Vassar College, at Poughkeepsie, and entered with great enthusiasm on the more settled work of that interesting and attractive position. He did not remain there long, however, for he soon received and accepted the appointment to the professorship of general and agricultural geology in the lately organized Cornell University.

In 1869, he was elected general secretary of the American Association for the Advancement of Science, for the meeting to be held in the following year at Troy. But before that meeting took place, he was again in South America on the first of the two Morgan expeditions, which were fitted out by the liberality, in great part, of the Hon. E. B. Morgan, of Aurora, N. Y. This time Prof. Hartt's field was the hitherto scantily explored valley of the Amazon; and one result of his studies there was the refutation of the theory of a vast Amazonian glacier, which had been suggested and advocated by Professor Agassiz, and which would have so strangely confounded all received ideas of the nature and extent of ice-action in the quaternary period, by bringing this agent into play over vast tropical lowlands. In announcing these results, however, Professor Hartt took the utmost care to avoid injuring the feelings of the eminent friend and teacher, whom he always revered and loved.

On this expedition, too, Professor Hartt had disclosed to the world the presence of palæozoic rocks in the basin of the Amazonas; and for the further exploration of these interesting and important localities, the second Morgan expedition was fitted out during the next year (1871).

Large areas were traversed, and many new species described, as the result of both these trips; and the great Amazonian valley was for the first time revealed to science in its real geological features. Prior to this time it had been almost entirely unknown; and to Professor Hartt's labors it is due that the true understanding of the great palæozoic basin of the Amazonas, presenting the same leading divisions with the rocks of that age in our own country and in Europe, has become part of the received and established possessions of science.

These four expeditions, with the minute and enthusiastic study given, not only to the geology, but to the botany, the archaeology, the ethnology, and the native languages of the different parts of Brazil, had rendered Professor Hartt already more familiar than any other living man with the natural features of that vast country, regarded from a broad scientific point of view. He had early won the strong friendship and confidence of the Emperor Dom Pedro, and it was therefore not surprising that that liberal and progressive ruler should have conceived the idea of a great general survey of the empire, and have fixed upon Professor Hartt as the one to conduct it. The invitation to form the plans and take charge of their execution, from the director of the "Comissão Geológico do Império do Brasil," gave Professor Hartt perhaps the grandest scientific task that has ever been placed in the hands of a single man. If we consider how the geology of the United States has been slowly wrought out, State by State and region by region, through the labors of many private explorers and many public surveys, and then remember that the vast Empire of Brazil has a territory almost equal to our own in extent and in variety, which up to the time of the Morgan expeditions had been almost a *terra incognita* to geologists, we shall readily perceive how grand and unparalleled a task was entrusted to Professor Hartt, in organizing a general survey of so great, so rich, and so diversified a country. But he was the one among living men, who was fitted to assume that work with the prospect of success. In the prime of his early manhood, vigorous in health, active, persevering, enthusiastic, with a reputation in science already well recognized, and with a familiar acquaintance with the country and the people that he was now called to serve, Hartt entered on his great career amid the pride and confidence of all who knew him aright. Nor did he fail to sustain his reputation. In the face of many difficulties and perplexities—the jealousies, the ignorance, and the wretched mock-economy, that wear the brain and waste the time of almost every head of great scientific enterprises—he pursued his plans. With his faithful assistants, mainly young men who had been brought forward under his own instruction at Cornell, he explored, collected, and wrote, until at last the hand of death stayed his ceaseless activity. His frequent visits to South America might, it would seem, have acclimated him thoroughly; but that terrible scourge, the yellow fever, which prevailed in Rio last spring, struck him down on the 18th of March.

In the heavy sorrow which we feel at his loss, it is a gratification to know that he has left behind him great and permanent memorials of his scientific labors in Brazil. Happily, most of the results of his explorations were not only written but substantially prepared for the press. These therefore, we may hope, will soon be given to the world. Of the National Museum which he had founded at Rio, his assistant, Mr. Rathbun, testifies that it has already attained such extent as "would do credit to a much larger company working a much longer time." Containing, as

it does, "fossils, minerals, and rocks from nearly every known geological locality in Brazil," it forms "the most complete repository of South American geology in the world." Nor is it thus rich in geology alone; the collections in marine zoölogy are most extensive and valuable; and the antiquities and prehistoric relics, gathered "from far up the Amazon to the southernmost province on the coast," have no parallel in their illustration of Brazilian archæology.

Having thus sketched, in the merest outline, the remarkable labors and successes of Prof. Hartt, we must pass over his literary activities, as represented in many valuable published articles, not only in his especial field of geology and archæology, but also in that of language and ethnology, and close this sketch with a few words regarding his personal qualities. Those who have seen Prof. Hartt in these sessions of the Convocation, may well remember his tall, slender figure, his piercing eye, his quick, energetic manner—all expressing clearly the character of the man—active, determined, full of life and enthusiasm; kindly and gentle withal, considerate of the feelings of others, frank, open, impatient of shams and delays. His passion for science never flagged, from the time when, as a boy in Nova Scotia, he would go out with his father to spend a holiday together in breaking out fossils from the neighboring ledges, on through all his wanderings amid the scarce-known tribes and the interlacing streams of the great Amazonian valley. Brought up in a Christian household, he was early imbued with principles of religious faith, which his scientific pursuits never led him to forsake or doubt. As a friend, he was kindly and gracious; as a teacher, enthusiastic and inspiring; as a scientist, an honor to our State, our country, and our age. The void that he leaves can never be filled; and the great work that he laid down so suddenly and so painfully, must wait long before any hand can be found adequate to take it up again.

PROFESSOR JAMES ORTON, PH. D.

[A notice of Professor Orton, by Professor D. S. Martin, will appear in the Proceedings of the next University Convocation.]

PROFESSOR WILLIAM L. PARSONS, D. D., OF INGHAM UNIVERSITY.

By Mrs. PARSONS.

Rev. William L. Parsons, D. D., Professor of Mental and Moral Philosophy in Ingham University, Le Roy, was born June, 1811, in Fair Haven, Vt., of a family largely represented in the ministry at home and in foreign lands.

Most of his youth was spent in Lockport, N. Y., where he became, at length, a partner with his father in mercantile business. But deepened religious convictions constrained him, at the age of twenty-four, to relinquish business and enter upon a course of study. After completing, at Geneva and at Oberlin, a full collegiate and theological course, he entered upon ministerial work in Newark, N. J., where his labors were greatly blessed. Subsequently he removed to the West, and was settled in Aurora, Ill., and later in Milwaukee, Wis. In both these places he became an inspiring power in the cause of education, and was the chief agent in founding the Milwaukee Female College. To an agency for this and for the more general related work of the American Woman's Educational Association he devoted some of his best years. Returning with improved health to the ministry, he preached in Mattapoisett, Mass., until seriously failing health compelled another change. Mrs. Parsons having been, before marriage, a prominent teacher in "Le Roy Female Seminary," it was arranged that Dr. and Mrs. Parsons should become professors in the same institution, under its more recent title of "Ingham University." From 1863 to his death, in December, 1877, he filled the Department of Mental and Moral Sciences, to which he was by nature and education admirably fitted.

Always a thinker, with more than ordinary analytical ability, his theological training had inured him to a habit of careful investigation and search for evidence. "As a preacher," writes a brother minister, "he was instructive and logical, and in the pulpit he never lost sight of his philosophy." In the professor's chair he was, therefore, quite at home. Says a pupil: "We were always interested in his classes, and never did he seem happier than when he had taught us to think, and when our difficult questions were brought to him for solution. Our superficial work often troubled him; he would have us dig below the surface for the rich truths there to be revealed." Never dogmatic, he led his pupils to investigate, treating their objections with all candor and kindness, so that they did not shrink from his searching analysis. His own mental action was logical, rapid, clear, with a special fondness for the abstruse and metaphysical; yet he carefully aimed to adjust his position to the varying standpoints of those whom he instructed. Always intent upon the truth, he would then guide them by different ways and by peculiar methods to a common result, aiming especially to induce in them the truth-seeking spirit and the truth-seeing power. While clear, positive and tenacious of great principles thus settled, he was by no means equally tenacious of mere opinions, personal preferences, and matters of taste. In these he recognized every one's equal right to his own.

Perhaps the most marked characteristic of Dr. Parsons, as a man and a teacher, was the consistent beauty of his moral nature. This domi-

nated his intellect. He was singularly pure and true, with a natural, transparent simplicity of character and manner, suggesting a genuine love to God and to man. Even when a constant sufferer, he was earnest and unselfish. There was also a charm of genial, playful humor and a ready sympathy which made him acceptable to the young as well as the old. Of course, his pupils were bound to him by a strong personal attachment, as testified in their numerous letters since his decease. The following is a single specimen :

"As I think upon this dear teacher, his gentle face comes before me with the smile it so generally wore. Would that I could make a vivid delineation of this Christian gentleman, and cause others to know something of the charm of his daily life. He was ever lenient with us, ever ready to admit excuses for our fun and thoughtlessness ; indeed, in the former he was a warm sympathizer, and when no malice or mischief mingled with it, would enter heartily into it. This was one reason of his influence over us—he never chilled us. But he never lowered his standard that he might reach us, and, gentle though he was, those kindly eyes could look very stern when moral wrong appeared. Any wrong-doer felt that a supposed "small sin" was exceedingly sinful when brought into his presence and confronted by his word and look. * * * He taught us, with all patience, to think, to investigate, and he never seemed to weary of us or of our questions. * * * 'Tis a sweet thought that, when earth's school-days are over, we shall meet our dear teacher with new lessons which we may be permitted to learn from him."

On what would be considered higher authority, it is asserted : "He was a careful thinker, an admirable teacher, an instructive preacher, and a guileless Christian."

Dr. Parsons was, besides being a contributor to various periodicals, the author of several published and unpublished books. These were mostly of a religious character : "The Believer's Victory over Satan's Devices," "Important Facts for the Unconverted," and "The Rock and the Keys" (yet in manuscript). The one school-book which he left nearly ready for the press is "Moral Science for Common Schools." The importance of this study for the mass of pupils was with him, as with many educators, a profound conviction. He felt that by such study must the true foundations of right character and of public safety be sought, and that the time must come when the principles of morals shall be made a common school study as much as those of numbers.

Such is a brief, imperfect record of a life filled up with unselfish, conscientious service for the Master, apparently without a thought of personal gain or ambition. It was a service of love, rendered often in weakness and suffering, through long years of invalidism ; the earnest, aspiring spirit triumphing over the frail, dying body.

In the resolutions passed by the Presbytery of Genesee occurs this sentence : "And we pray that the mantle of his unaffected, earnest piety may rest upon us, and that his example may stimulate us all to a higher and nobler Christian life."

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1878.

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[CONVOCATION, SIG. 9.]

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